The Builder.

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God Save the King!

THE present week is one in which even journals which are dedicated to a special province of human work and endeavour may afford for a moment to forget their usual limitations of subject, in order to join in the general expression of loyalty and good wishes to the Sovereign of this ancient realm, who will be crowned this week with a ceremonial venerable from its antiquity, and in a church which, originally founded at the instance of an English Sovereign of pious though rather weak memory, has in the course of centuries become, more than any other building, the centre of our national memories and our national honour. The occasion is certainly one which appeals to the imagination. As a mere spectacle it will no doubt be magnificent; but this is a case in which (to adapt Milton a little), "more is meant than meets the eye"; it is not only the outer aspect of the show which appeals to us, but its symbolical significance; it is the outward sign or form of a Government and a Constitution which has enjoyed a historical continuity unparalleled in the modern world, and the stability of which for so long a period is the best practical proof of its adaptation to the requirements and wishes of the nation. The relation of the Sovereign to the people is indeed widely different from what it was in times past; the freedom of the people, as Tennyson put it, has "broadened slowly down from precedent to precedent"; but while the English people have perhaps a greater amount of individual liberty than is to be found in any other country, we have contrived with that to preserve the ancient forms which link the present with the past, and to preserve also, what is by no means unimportant, the element of splendour in governmental ceremonies—the decorative side of government function: an element not to be despised, since it adds something to the splendour of life and something also (whatever Republican purists and economists may say) to the dignity of national representation. Anyone who has read in that clever American novel "Through one Administration," the description of the dull commonplace of the White House receptions, may conclude that it is something to live under a form of government which gives occasion from time to time for a splendid spectacle, as a little relief from the "set grey life" of every day. And it should be an additional reason for national rejoicing on this occasion, that the festival of the Coronation has been preceded by the termination of a war which, from all we can gather, appears to have had the happy effect of transforming a set of brave enemies into a set of loyal friends of the Empire, and of extending the powers and the responsibilities of the government of which the Sovereign to be crowned this week is the highest and the hereditary representative.

The foregoing remarks were written for publication in our issue under date June 28, the formerly intended Coronation week, and were interrupted at the last moment by the melancholy announcement of the postponement of the ceremony in consequence of the King's serious illness. We prefer, however, to leave them as they were written, as the expression of our feeling at the time, and when everything seemed to promise a ceremonial of almost unprecedented dignity and splendour. No doubt the ceremony will still be an imposing one, though it must be shorn of some part of its significance by the absence of many of the foreign representatives who were unable to remain. On the other hand, the nation will feel even an enhanced interest in the coronation of a Sovereign who has a second time been restored to them after a dangerous illness, and who has shown under this recent trial a fortitude on his own account, and an unselfish regard for others, which cannot have passed unrecognised or unappreciated by his subjects, who will all unite in the hope that he who is to be crowned this week may be spared for many years to reign over us.

THE ENGLISH CROWN.

By Cyril Davenport, F.S.A. *With Illustrations by* R. W. Paul.

A SPECIAL ornament or diadem to be worn on the head is a very early visible mark of kingship. Among savage nations advanced enough to adopt some form of government, the strongest men became the rulers, and remained so as long as they retained their muscular superiority. A very usual sign of this chieftainship was a feather, or group of feathers, worn on the head.

Among us to the present day the use of feathers worn on the head to denote rank remains in full force. Although for the very highest rank we have no such head-dress, yet the feather badge of the Princes of Wales is evidence that at no very distant period three ostrich plumes worn on the head were a visible mark of royalty.

There are, moreover, plenty of official instances of less exalted ranks which are indicated, among other ways, by the wearing of distinctive feathers. Such are the richly plumed State hats of all our great orders of knighthood, the carefully feathered cocked hats of the staff of our army and other military dignitaries, and the black and white feathered edgings worn on the cocked hats of Civil servants on official occasions.

These marks of honour, however, are only survivals of one form of savage ornament, and the particular head-dress in which we are for the moment more interested has developed in the direction of metal rather than in that of feathers.

Among the ruins of Mycenæ and of Troy—both among the earliest remains of any civilised towns in Europe—Dr. Henry Schliemann found several beautiful diadems of gold. These had doubtless developed gradually from simple circlets of metal. Those found at Mycenæ were of thin hammered gold, of an elongated oval form, long enough to fasten round the head, the thickest part coming over the forehead and the finely tapering ends fastening with a tie or wire at the back. Ornamental designs were repousséd in low relief all over the entire plate, and in some instances the upper rim was further ornamented with

leaves of thin gold, each separately attached, thereby foreshadowing the circlet with its upper edge ornamented with fleur-de-lys.

This form of diadem is common enough at an early period, and several examples of it have been found at other places, and although these doubtless indicated rank, it is not known at present to what extent they did so.

The diadems found at Troy were of an entirely different type, they consisted of close, short chains of gold, fastened on to a thin ribbon-like flat chain which encircled the head, while from that part of the circlet which came over the ears depended a few long chains of similar workmanship, hanging down to the shoulders. These long drooping side chains were probably the prototypes of the curious "cataseistas" or jewelled chains which show attached to several of the crowns and coronets of our early kings, as figured on coins and some of the great seals, that of Edward the Confessor and Henry I. among them. The cataseistas, one over each ear and one at the back, can also be actually seen on the beautiful mediæval "Corona Sancta," or crown of St. Stephen, the crown of Hungary, as well as upon the doubtless correct restoration, by Herr Franz Bock, of the mediæval crown of Constantine Monomachos.

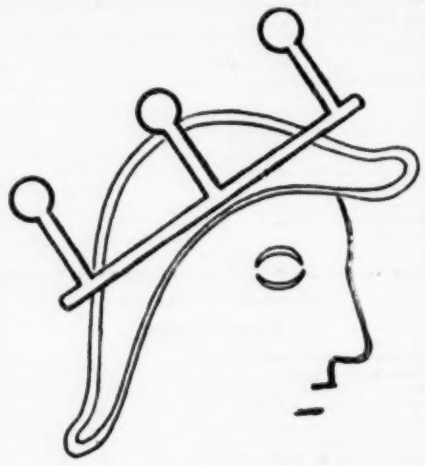
It is likely enough that one of the first forms of actual diadem was a string of beads. The earliest ornament of any kind into which man put any constructive ability was most likely a necklace of naturally pierced shells. Indeed, the earliest known human skeleton—one found in a cave near Mentone—actually had a necklace of pierced shells and teeth sticking to it. Whether first on some occasion such a necklace was made too small for its recipient and stuck fast on his head with artistic effect, or whether, on the other hand, a diadem was made too big and slipped down accidently on to the owner's shoulders, will never be known; but however it arrived, it seems on the evidence of coins that our early kings actually wore coronets of strings of beads (fig. 1).

Head of Coenwulf, King of Mercia shewing a Coronet of Beads.

Fig. 1.

No remains of such diadems now exist, so conjectures as to their actual construction cannot well be checked, but there is plenty of documentary evidence as to head fillets of some soft material having had a long reign as marks of authority. Alexander the Great wore one with which he bound up a wounded friend.

At a period in our English history somewhere about the tenth century, the beaded fillet certainly gave way to a solid metal circlet. This change was possibly due to the wish of kings to wear some distinct mark of their rank in battle. The beaded or soft fillet would neither look well nor last well on a helmet, so we find that on a penny of Æthelstan (fig. 2) his helmet is adorned



Coronet on helmet of Æthelstan, from a penny, shewing coronet with single pearls on stems.

Fig. 2.

with a solid circlet bearing three pearls on raised stems; the entire coronet may be supposed to have had four of these pearls.

From this standpoint the growth of the ornamentation on our English crown can be followed with some certainty. I do not mean to say that each successive coronet fully carries out any regular sequence, because several of them revert to older forms; but now and then a development appears which tends more and more to repetition, and so slowly the present design has been evolved

The next coronet after that of Æthelstan to show any true development is figured on the great Seal of William I. (fig. 3), where

Coronet from the Great Seal of William I^st^ shewing points with triple pearls.

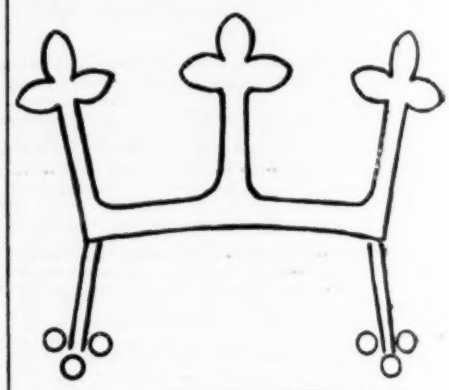
Fig. 3.

the single pearls on their stalks have become triplicated. This triple arrangement of separate pearls or dots is one which easily takes the more distinctly decorative form of a single trefoil, and into this shape it soon falls, as may be seen on the Great Seal of Henry I. (fig. 4), the coronet also showing the mediæval cataseistas depending from each side.

On pennies of Edward I. the trefoils of Henry, now more carefully drawn and quite properly to be described as heraldic *fleurs-de-lys*, are shown with a supplementary pearl between each (fig. 5).

The mention of the word "fleur-de-lys" serves to remind us that from the time of Edward III. until 1801 the coat of arms of France was quartered with that of England on our Royal coat of arms. Not only that, but for the greater part of that time it was accorded the place of honour—the first quarter—on the ground that England was only a duchy as compared with France, by reason of William, Duke of Normandy. This may also account in some degree for the fact that nearly all our early kings are shown wearing coronets instead of closed crowns.

This long connexion of our own Royal coat with the fleur-de-lys of France gives



Coronet from Great Seal of Henry I^st^ shewing trefoils and cataseistas.

Fig. 4.

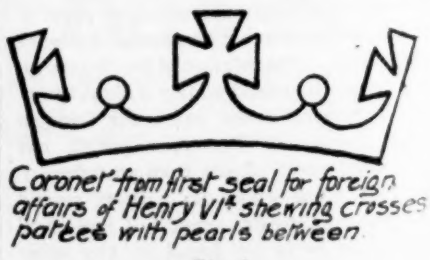
colour to the common belief that the fleur-de-lys on the crown of St. Edward are really the French ones, and were put on the crown so as to be in accordance with those on the shield; but, as I have endeavoured to show, those on the crown are responsible for their own shape, and have really nothing to do with those which were on the shield. If they had really been adopted for the reason above stated, they should have been discon-

Coronet from penny of Edward I shewing fleurs-de-lys with pearls between

Fig. 5.

tinued in 1801, when George III. finally excluded the French coat from our Royal shield.

Now comes the question of the crosses-patées. When our Henry VI. was made King of France he found it necessary to have Great Seals made for his department of Foreign Affairs. On the first of these seals the King is seated in State and has a coat of arms surmounted by a coronet on each side of him. One of these coats shows the



Coronet from first seal for foreign affairs of Henry VI^st^ shewing crosses patées with pearls between

Fig. 6.

arms of France, and the coronet above it bears fleur-de-lys along its upper edge; the other shows the coat of arms of England, and the coronet above it bears the crosses-patées alternately with low-pearls (fig. 6).

On the second seal for foreign affairs of the same king he is shown actually wearing a coronet which shows crosses-patées and low pearls arranged in the same way, and crosses-patées from this time show a marked tendency to recur on the English coronets or crowns until a time comes when they always appear.

The normal English coronet of this period closely resembled the French one, they both had fleur-de-lys set on a circlet, and when Henry found it advisable, in face of his double sovereignty to show on a great seal the arms of each country, he evidently considered it necessary to differentiate the ornamentation of the respective superimposed coronets. Retaining, therefore, quite properly the coronet with rounded fleur-de-lys for his French coat, he squared out and truncated each of the three petals for use upon that over his English coat.

This flattening out and squaring of the ends of the fleur-de-lys formed at once the heraldic ornament known as a cross-patée. The low, single pearls which at first are found alternately with the new crosses-patées now begin gradually to develop in their turn in the same way as before, they soon become trefoils and then fleurs-de-lys. So we get the crosses and the fleur-de-lys alternately, as they show on the great seal of Henry VIII. (fig. 7).

Crown from Great Seal of Henry VIII showing ornamentation as now.

Fig. 7.

The crown now permanently shows another characteristic, that of being arched or enclosed, and surmounted at the top by a mound or orb and cross. The enclosing of a coronet by arches is considered to turn it into a crown, and to indicate independent sovereignty, but this view has not been very strictly adhered to in the case of our crowns, as they show indiscriminately in both ways on official coins and seals from the time of Edward the Confessor until that of Queen Victoria, who in her last coins is represented as wearing a coronet only, which is, moreover, wrongly designed, as it would seem to have upon it many more than the proper number of four crosses-pattées and four fleurs-de-lys. It is curious that such an inaccurate figure should have been allowed to pass muster.

But mistakes are not all of modern provenance. It is doubtful whether the apparently enclosed crowns, such as those worn by Edward the Confessor, Harold, William I., Stephen, and Edward IV., were not really only some kind of regal cap.

From the time of Henry VIII. onwards, however, we meet with no difficulty, the type of crown has been definitely settled, and if in future the Sovereign is to be shown on coins or seals with anything at all upon his head, it is to be hoped that it will be a proper crown with proper attributes. The type is a circlet, along the upper edge of which are set alternately four crosses-patées and four fleur-de-lys, from the circlet rise two complete arches, crossing from cross-patée to cross-patée, the junction at the top surmounted by an orb and cross, significative of the Christian dominion over the world. This is a noble type and can be studied in perfection in the excellent Coronation medal recently designed for Messrs. Elkington by Herr Emil Fuchs.

The Royal Crowns may be jewelled as richly as each Sovereign may desire, but the true form should remain unaltered, or, at all events, should only be added to as time goes on, in accordance with some large growth of Empire. The power, however, of including historic jewels in the Crown may, however, render it always unnecessary to disturb the crosses and fleur-de-lys; as, for instance, it would be fitting enough to indicate the Sovereignty of India by the inclusion of the Koh-i-Noor.

On the restoration of Charles II., Sir Robert Vyner, the royal goldsmith, was commissioned to make new regalia of the same patterns as those which had been destroyed by order of the Roundhead Government in 1649.

St. Edward's crown, the crown of England, now kept at the Tower, is substantially the same that Sir Robert Vyner made for Charles II. Besides this official crown, another more ornamental one has been made for all our kings and queens since Charles II. The silver settings of some of these State crowns, denuded of their jewels, still exist, and others have been figured in various places. All of them seem to have had the great ruby of Edward the Black Prince set in the centre of the front cross-patée.

Crowns belonging to kings and queens regnant, as well as the circlets and crowns which have been made for queens-consort, are always jewelled. No other crowns or coronets are allowed to carry upon them more than simulacra of jewels embossed upon the circlet.

The jewelled work on St. Edward's crown is not of much interest. The main arrangement of the jewelled ornamentation is that of clusters, each consisting of a large coloured stone, ruby, emerald, or sapphire, set in a rim of enamelled arabesques, sometimes further ornamented with diamonds. No stone of special beauty or historic interest finds a place in this crown.

The State crown of Queen Victoria, which will be used, with minor alterations, for the Coronation of his Majesty King Edward VII. on the 26th inst., is a fine example of one of the ornamental State, or Imperial, crowns. It was made by Messrs. Rundle & Bridge for the Queen in 1838, of thin silver, and is thickly set with jewels, some of which were in the former State crowns, and some of which were newly added. In the front of the circlet is a large flat sapphire cut *en cabochon*, and partially pierced, which was taken from the crown of Charles II., and bequeathed to the Prince of Wales, afterwards George IV. by Henry Benedict, Cardinal York, with other Stuart treasure. In the centre of the cross-patée, just above the sapphire, is the great spinel ruby which was given to Edward the Black Prince by Don Pedro, King of Castile. It is also said to have been worn by Henry V. at Agincourt in front of the kingly coronet on his helmet. It is a splendid and remarkable stone measuring about 2 in. in length. It is not cut, but only polished on its own naturally irregular surface. It is pierced, along its greater axis, after the manner of most Oriental stones, which have been at some time or other strung as beads, the upper opening of the piercing being now closed by a small ruby stud set in gold.

One more historic stone adorns this crown, it is a large sapphire, now more or less spoilt by having been recut in the modern way, which was taken from the ring of Edward the Confessor when his shrine at Westminster was opened.

Among the 277 pearls which are on this crown, many are whole and set as acorns on the arches, which represent oak sprays. Other fine drop-shaped pearls are set at the angles where the arches cross at the top. The oak leaves of the arches are all thickly set with diamonds, as, indeed, the whole surface of the crown and its ornaments may be said to be. There are on it altogether 2,783 diamonds cut as brilliants.

No development of design such as we have followed can be traced in the case of any of the great crowns of the world. Every mediæval crown existing is a law for itself, and is unique. The crown of Russia, indeed, may be considered to have followed the development of a bishop's mitre, whatever that may be, because it actually is a richly-jewelled mitre with two lobes. All kingly crowns are considered by some authorities to be analogous to bishops' mitres in the same way that sceptres may be held to represent a form of crozier, but here we get upon debatable ground.

We already use the oldest Coronation ceremony in the world, carried out now substantially in the same way as it was centuries ago, and has been ever since, and we can also claim with some show of reason that the Crown of England, alone among crowns, is the outcome of a long series of slow developments, and is designed on lines which have been regularly evolved from primitive simplicity into a dignified and noble type.

VENETIAN CHURCHES.

THE disaster which has recently befallen one of the most famous of Italian cities has naturally aroused keen public criticism of the authorities and of the system under which public monuments in Italy are cared for. Italy has received a greater number of valuable heirlooms in the form of monumental art than any other country, and, in consequence of circumstances resulting from political and social reforms during the past century, these objects of art, as is often the case with heirlooms, have become a somewhat burdensome trust confided to the care of the Italian Government. The following notes on the present condition of the Venetian churches will show the amount of responsibility which the Government has assumed during the course of events in the great revolutionary period, 1840-1870.

In 1870, at the time of the unification of Italy, the law of mortmain, by which property could be held by corporations or individuals, civil or ecclesiastical, was practically abolished, and all such property not confirmed by, or subject to, the new laws relating to trusteeship, appears to have been

handed over to the Administration of Crown Property, called the "Demanio." In this way the greater part of the monastic and conventual property, including all the churches with their monumental contents, passed into the hands of Government. In the case of Venice, where few available funds were forthcoming to purchase back the confiscated property for ecclesiastical use, the monumental churches have been in the care of different Government bureaux for the past thirty years.

A very wide distinction must be drawn between the meaning and use of what is called a church on the north and on the south of the Alps. Italian Christian churches have throughout all ages represented the temples of an earlier religious system to a very great extent. They also represent in a still more decisive manner the tomb-houses of distinguished or wealthy families. In more ancient times such tomb-houses had been attached to private villas, and were also private chapels for religious purposes. Under a Christian dispensation these tomb-houses of different families were collected together, and at first mere adjuncts, became in more recent times the most important part in the structure of churches. In other words, Italian churches are essentially receptacles for the dead, instead of being primarily places of religious instruction amongst the living as in northern countries. Such a system is represented only to a certain extent in the country church of the north, where the local potentate may usually have his family tomb within the chancel or in a chantry; but in the Italian church the whole structure depends upon its utility as a species of "Columbarium" wherein to accommodate the mortal remains of past generations. Every Italian church is surrounded by a series of little chapels containing altars at which the sacrifice of the mass was intended to be performed in perpetuity for the repose of the souls of the founders of such buildings, whose tombs are ranged upon the surrounding walls, or form the pavement. These chapels or reserved spaces are always the private property of individuals or of their representatives, and they can still be sold as freeholds.* In case of a transfer of such property the purchaser of course puts up his "stemma" or family badge on every coign of vantage, but nowadays taste in such matters has changed a great deal, and it is rare for such a transfer to take place, for obvious reasons. Intramural sepulture is now almost prohibited in Italy, and consequently the chief object of possessing one of these chapels no longer exists.

This system of burying the dead of the superior classes within the churches gave rise to a difficulty of accommodation, which in the Middle Ages was met by the simple expedient of providing a series of large stone chests or sarcophagi, ingeniously fitted into the walls or between the buttresses on the outside of the churches, or in contiguous cloisters. In these the accumulating bones of earlier interments were intended to be collected, and by this expedient the transfer of proprietary rights in the chapels was much facilitated. The outside ossuary or bone-chest was decorated with appropriate inscriptions and the "stemma" of the family.

In Venice one or two of the great churches are still surrounded by these miniature ossuaries built in between their external buttresses, and corresponding with the family altars or chapels inside. SS. Giovanni e Paolo has a great many preserved around its front, in spite of the drastic alterations of the "restoration" in 1870. The more ancient bone-chests were sometimes destroyed when pseudo-Classic fronts and later additions were made to mediæval churches.

One of the most remarkable instances of this mediæval fashion of burying the dead in sarcophagi between the buttresses of the outside of a church is the great collection of tombs surrounding the Cathedral of Rimini, made by Sigismund Malatesta in 1450 (illustrated in the *Builder* of February 1 of this year). In this case the Lord of Rimini was adopting a current fashion for the purpose of gratifying his "classic" enthusiasm; the sarcophagi were supposed to contain the bones of philosophers and poets gathered from various parts of Italy, which, in those "Renaissance" times, were perhaps of more consideration for the purpose than the commoner mortal remains of a distinguished ancestry and old descent. Sigismund Malatesta, doubtless, thought he was doing a very fine thing, and certainly a very novel one. In another very remarkable example of this fashion—S. Maria Novella, Florence—the bone-chests, several dozens in number, are said to contain the remains of persons formerly buried in the more ancient Cathedral of Santa Reparata in Florence. They were moved to the present position in the thirteenth century. The greater part of these tombs were barbarously "restored" along with the unfortunate church in about 1860. The custom referred to may perhaps be traced to extreme antiquity. The ancient church of S. Andrea in the Roman Forum possesses a large number of sepulchres cut into its walls in the form of the contemporary loculi of the catacombs, but occupying a position which reminds one of the bone-chests of the mediæval churches.

At the present day the ancient churches of Venice are only used by the very poorest class of the people; their ownership is merely governmental, as the proprietary rights belonging to their chapels can only be exercised for the specific purpose for which they were erected, a purpose long since obsolete. Burial within churches is no longer customary, and, as in other countries, a subject of special permission not easily obtained. With the abandonment of the chapels for their intended purpose, the altars within them have also fallen out of use, the stipends attached for saying mass have disappeared, and the parish incumbents make use of them without reference to their original significance. The neighbouring palaces still carry the names of the illustrious dead who lie buried in these old churches, but there are few, if any, instances of the chapel being considered as attached to the palace as in the olden days, and as is still the custom in other Italian cities. Perhaps we may be allowed to consider that a certain advantage has resulted from this state of things as far as concerns monumental art. The neglected monuments of Venice have certainly escaped a great deal of the well-meant, but altogether disastrous "restoration" which has ruined so many of the grand old churches of Rome and Florence during the past nineteenth century.

The hitherto very much abandoned church of the "Frari," with its countless tombs and dirty disused chapels—a veritable monument of desolation and decay—is now being treated with admirable care. Since the sixteenth century this church seems hardly to have been touched structurally; at that period a very unsightly clerestory of half-circle windows was inserted to show off the ponderous monuments which block up its western aisles. This clerestory was afterwards found to admit such a glare of light that the present dingy red curtains became a necessity. As is the case wherever the huge monuments of the later Doges have been placed in these old churches of the pointed style, the inevitably accompanying whitewash, covering up blocked windows and earlier decorations, has been applied without stint. This whitewash, when of the last century, is usually relieved with drab or grey imitation of non-existent masonry, which in course of time becomes peculiarly dismal in appearance. In such cases it seems permissible to remove the whitewash when there is any decoration of an old and valuable kind concealed underneath. So in the present case of the "Frari," the decoration of the fourteenth century is being carefully brought to light, but without, of course, interfering with the later monuments, or impairing their completeness. When finished, the eastern part of this church will have a particularly magnificent effect in conjunction with the remarkably preserved mediæval fittings of the choir and the unique rood-screen. In the reinstatement of these decorations, as also in the Church of S. Stefano, on the Grand Canal, no attempt to "restore" them is made. The whitewash is carefully removed and the stencilling beneath is merely fortified and touched up here and there in places where it may have been practically destroyed.

The style of decoration in the fourteenth and fifteenth century churches of Venice is of a local character, some peculiarities of which may be noticed in the pictures of Carpaccio. The vaulting ribs and other constructive features were often painted brick red on a plaster covering to the real brickwork. The walls were treated in an imitation of brickwork or marble, which has a pleasing effect, as it is a mere conventionalism, and not intended as a deception. The Church of S. Stefano possesses, thanks to the uncovering process now going on, a very fine and elaborate example of this style. The nave is partly restored to its original condition, with the hitherto covered-up decoration. The arches of the nave arcades possess elaborately floriated and crocketed ornament, culminating in a rich finial over the apex of each arch, from which issues the half figure of a saint, whose name is inscribed in each case in long black letter behind his head. The whole conception of this design relieved on a chessboard pattern of delicate red and yellow—perhaps representing brickwork—is very original and pleasing. This chequered decoration in S. Stefano reminds one a great deal of the somewhat similar design on the outside of the upper story of the Ducal Palace.

* In Florence one or two of the chapels, originally the property of great historic families, have passed into other hands during the nineteenth century. In Santa Croce, the "Westminster Abbey" of Italy, an ancient chapel was sold to the since extinct English family of Sloane in 1860.

NOTES.

The Venice Campanile.

IN a letter to the *Times* of Wednesday last, Sir Edwin Durning-Lawrence makes the statement that it would have been perfectly easy, and even cheap, to have made the Venice Campanile as strong as when first erected by the injection of Portland cement grout at the proper time. We are not aware that any one having the slightest authority to speak as an expert on constructional subjects has suggested that the collapse of the Campanile was unavoidable. On the contrary, the opinion has been expressed in more than one direction that the catastrophe could have been prevented by the exercise of greater vigilance on the part of those responsible for the safety of the structure. Thus it appears that the letter in question is intended to combat a view that has not been seriously raised. Nevertheless, it is interesting to architects and others as a reminder of the value of Portland cement for binding together masses of material, and for strengthening porous substances. If we accept the view not unreasonably entertained by the writer, that the collapse was due to loss of coherence, so that the material of the tower "was little better than a mass of dry dust," there can be no doubt that the injection of cement grout, filling the pores of the old bricks and all interstices of the walls, would have been of immense value. Such treatment involves the drilling of numerous holes through which the healing liquid may be pumped, and as the process must be started from the bottom and continued gradually and carefully to the top, considerable time is necessary for completion in the case of a lofty structure. The work of restoring the Venice Campanile would have occupied some two or three years, so it is evident that the grouting treatment could only have been undertaken as a precautionary measure, and not when a state of urgency had been allowed to arise. The usefulness of cement grouting is by no means unknown to architects, and is fully recognised by engineers. Some of our readers will remember that we recently called attention to the practice followed in the New York subway, where defective patches of concrete were made good by the injection of cement grout, instead of being cut out and replaced in the ordinary manner. Railway and bridge engineers frequently find grouting under pressure of the greatest service, and there is no reason why it should not often be adopted in architectural practice where the conditions are favourable, both in new and in old buildings.

Stonehenge.

FROM a report of the meeting of the Wilts County Council on Tuesday, it appears that there is some reason to hope that Stonehenge may be secured as national property, which would be by far the best safeguard for its future preservation. In the statement which Lord Edmond Fitzmaurice made on the occasion, he said that the position taken by Sir E. Antrobus, the present owner of Stonehenge, had been much misrepresented. That Sir Edmund Antrobus ever asked 125,000*l.* for Stonehenge and the land immediately adjacent was, he said, quite untrue. That matter related to a far larger negotiation, and not only was it not the figure named for Stonehenge, but it related to negotiations for land from which Stonehenge was expressly excluded. He further urged that for the County Council to enter into a discussion of rights of way on this subject would, under the circumstances, be only obscuring the main issue. This view was accepted, and the motion which Mr. Percy Wyndham had intended to bring forward on this subject was withdrawn. So far, therefore, the question of Stonehenge seems to be in a more satisfactory position than was supposed. We hope the matter will end with its purchase by the nation, as such a remarkable historic monument, even if safe for the present, ought to be secured against the possible caprices of future private owners.

County Councils and the Education Bill.

WE are glad to see that the Herts County Council has appointed a Committee to investigate the conditions of, and various points in regard to, education in their county. This is done in view of the passing of the Education Bill, and it is to be hoped that the example of this Council will be followed in other parts of England. It is more especially to be desired that they should investigate the expenditure of money by small local authorities for the purposes of so-called technical education. A great deal of this has been wasted in what is little better than winter amusements, which have never really given any consecutive instruction so as to fit the learners for taking up some special occupation after the course has been completed. It is desirable, if possible, that when the Education Bill comes into operation local technical education should be centralised. This would limit the number of students, but, on the other hand, it would mean that the course of study was seriously pursued, and there would be some certainty that the money spent by the Councils would be really productive of results.

Powers of Corporations and Water Supply.

A QUESTION of some interest has been decided in the case of the Mayor, Aldermen, &c., of the Borough of Northampton *v.* Ellen. The Corporation purchased the waterworks in 1884, and Section 36 of their Act provided that for the supply of water for domestic use they should be entitled to charge a sum not exceeding 7½ per cent. on the net rateable value of each dwelling-house. Section 25 gave them power to make up any deficiency that might arise out of the general district rate. In 1890 the boundaries of the borough were extended, and by the Extension Order it was provided that for a period of ten years the general district rate levied on this extended portion of the borough should not, when added to the poor rate, the borough rate, "and any other rate made by the Corporation in the same year," exceed 5s. 6d. in the pound. Recently the Corporation had reduced the water rate from 7½ per cent. within the old borough, but retained it at 7½ per cent. in the new district, leaving the deficiency thus created to be made good by the general district rate. The Corporation were now suing the defendant in respect of the water rate levied on a house in the new district, and the defendant resisted payment on the ground that no water rate was leviable as long as the rates exceeded 5s. 6d. in the pound. Two important points were decided by the Court. First, that under Section 36 of the Act (a section drawn in very general terms in connexion with waterworks), the Corporation had no power to differentiate the rate in the two districts; secondly, that a water rate was not to be taken into consideration under the Order in arriving at the rates which were not to exceed 6s. 6d., the water rate not being a rate in such sense, but a price paid for the water, just as gas might be purchased.

An International Fire Prevention Exhibition.

WE learn that the British Fire Prevention Committee are organising an International Exhibition of fire preventive and life-saving appliances, to be held at Earl's Court from May to October, 1903. The exhibition will be classified under the heads of "Fire Prevention," including building construction, and electrical and heating safeguards; "Fire Fighting," including all fire-extinguishing and life-saving appliances and fire-station equipment; "Fire Calls"; "Salvage Work"; "Ambulance Service"; "Water Supply," &c. As it is intended to illustrate also the history of the subject, there will be a "History, Literature, and Art" section, including books and periodicals, illustrations of fires, &c. The scheme seems very well drawn up, and while such an exhibition cannot fail to be very interesting, it is to be hoped that it may also have practical results.

Liverpool School of Architecture.

WE have received the prospectus for 1902-3 of the School of Architecture in connexion with University College, Liverpool, which has additional interest just now that the Victoria University at Liverpool has decided to grant a degree in architecture. The prospectus shows an excellent and most comprehensive programme of studies, under the general management of Professor Simpson. The following quotation from the prospectus will be of interest:—

"For the first time in England (in America a degree scheme is almost universal), a student can obtain a degree in which a knowledge of architecture is combined with a knowledge of general subjects. The advantages of this course are obvious. A student can now continue his liberal studies at the same time that he is studying the special subject which he is afterwards going to make his profession. Candidates for the B.A. degree are required to pass—(*a*) the Preliminary examination of the University in five subjects—(1) English Language and English History; (2) Mathematics; (3) Latin; (4) Elementary Mechanics; (5) One of the following: Greek, German, French; (*b*) the Intermediate examination for the ordinary B.A. degree in the following subjects:—(1) One of the following: Greek, Latin, French, German, Italian; (2) One of the following: Ancient History, Modern History, English Literature; (3) One of the following: Physics, Pure Mathematics, Applied Mathematics. Candidates are required to present certificates of having attended (*a*) the approved classes for the subjects presented in the Intermediate examination; (*b*) courses of instruction in Architecture and allied subjects averaging not less than five hours a week the first year and fifteen hours a week in the second and third years. Such courses shall include all the subjects presented for examination. An attendance of not less than fifty hours in the Department of Engineering is required from all candidates. The subjects of examination are:—(*a*) History of Ancient and Mediæval Architecture; (*b*) History of Modern Architecture; (*c*) Construction and Planning of Buildings, including Sanitation. Graphic Statics; (*d*) Architectural Drawing. And any two of the following:—(*e*) Freehand Drawing; (*f*) Modelling; (*g*) Decorative Design; (*h*) Applied Mechanics; (*i*) Art and Theory of Painting; (*j*) Art and Theory of Sculpture."

With such a scheme as this, and with excel-

lent instructors (as we know to be the case)' Liverpool may look to become a new centre of architectural education.

Handmade Lathing.

Our advertisement columns, this week and last, contain an appeal from the London Operative Lathrenders' Trade Union, addressed to builders, urging them, on practical as well as on patriotic grounds, to use English-made hand-cleft ceiling laths in place of foreign machine-made laths. With regard to the patriotic claim, we fear the time is past for that kind of argument; in the present ready commercial intercourse with all parts of the world it can hardly be expected that buyers will do otherwise than go to the cheapest market, if they can get what they want abroad at a lower rate than in England. The argument should be confined to urging that the hand-made laths are the best, and here we are fully in sympathy with the advertisers. Their reasons for this opinion are fully stated in their advertisement, and are we believe quite sound, and we recommend them to the attention of those builders who wish to do the best, and not merely the cheapest work.

University College.

At the distribution of prizes last week, the headmaster of the school, Mr. J. L. Paton, adverted to the proposed removal of the school to fresh quarters in the northern suburbs, and stated that an estimated sum of from 70,000*l.* to 80,000*l.* would be required for the erection of efficient buildings upon a new site. As a portion of the old buildings will thus be set free for other uses, it is to be hoped that the authorities of University College will take the opportunity to remove the unsightly building which they have erected towards Gower-street for the use of the engineering school, and will restore Wilkins's open quadrangle as he intended it to be.

The Lyceum Theatre.

We understand that the shareholders have finally resolved to dispose of the property rather than carry out the structural alterations required by the London County Council at an outlay estimated to exceed 15,000*l.* The company was formed in March, 1899, to acquire for 275,000*l.* the freehold estate—covering 22,700 ft. superficial and valued at 260,000*l.*—of the theatre, with rentals of adjoining premises, and the interest of Sir Henry Irving as lessee. The Lyceum Theatre is one of the oldest established playhouses in the town. It was originally built in 1765 after designs by James Paine, as an academy and exhibition-room under that name for the Incorporated Society of Artists; Garrick purchased the lease from them that the building might not become converted into a theatre. It stood next to Wimbledon House, afterwards D'Oyley's famous linen and small-wares shop, near what is now the south-east corner of Wellington-street. In 1790 one Lingham, of the Strand, a breeches-maker, bought the house and opened it for musical performances. Five years afterwards he leased an adjoining plot to Dr. Arnold, the composer, who there built a theatre, but by reason of the strong opposition of the Covent Garden and Drury Lane managers his enterprise failed, and the house was used for exhibitions of paintings and various entertainments and shows, amongst them being Winsor's experiments (1803-4) in gas-lighting. S. J. Arnold, succeeding his father, enlarged the building in 1809 for his English Opera and Ballet House, which gave way to the new theatre erected for, it is said, 80,000*l.* in 1816 after Samuel Beazley's designs, and destroyed by fire on February 16, 1830. The site having been taken for the laying out of Wellington-street, 1829-30, as an approach to Waterloo Bridge, a new theatre was built on the present site in that street, at a cost of 35,000*l.* from plans and designs by Beazley, and opened for English Opera on July 14, 1834. Beazley built a new green-room in 1838, and a room at the Lyceum for the recently revived "Sublime Society of Beefsteaks," founded by Rich and Lambert at Covent Garden Theatre in 1735. That Society, whose effects were dispersed at Christie's Rooms in April, 1869, had migrated to the (old) Lyceum in S. J. Arnold's time, and, after a sojourn in 1830-8 at the Bedford Head, again to a suite of rooms (entered from Exeter-street) at the Lyceum. In 1847 the interior was richly decorated for Charles Mathews and Mme. Vestris; the latter there bade farewell to the stage, in Planché's extravaganza, "Once Upon a Time." Alterations of the interior, with new entrances and exit-doors, and an enlargement of the house by the taking in of the two restaurants on either side of the portico, were effected eleven years ago under C. J. Phipps's superintendence. During thirty years past the fortunes of the theatre have been closely identified with Sir Henry Irving's dramatic career. Particulars of Sir William Emerson's award in the arbitration before him, as between the London County Council and the proprietors, are given in our number of July 12 last.

Great Opportunity for Architects.

The Trustees of the Martyrs' Memorial Church, Canterbury, advertise a competition which may be said to be exceptional even in these days of remarkable temptations offered to competing architects. They wish for plans for a church to seat 400 persons, together with a schoolroom to accommodate 250 children, with various adjuncts which are mentioned. For this they offer 15*l.* as a first premium, with the munificent addition of 5*l.* as a second premium. The fortunate architect who is selected for the first premium will be required to furnish a draft specification and "necessary additional satisfactory elevations and details for working," on the receipt of which the 15*l.* will be paid to him, "and the plans and drawings will become the property of the Trustees without further charge." Lest, however, the premiated architect should be anxious as to the proper carrying out of his design, it is added that "a clerk of works will see to the carrying out of the design." We can imagine the rush that there will be among the leading church architects of the day to avail themselves of this remarkable offer.

Schools, Edinburgh.—It is proposed to make an extensive addition to the Broughton School, Edinburgh, and plans by Mr. Carfrae, the architect, were submitted to the Edinburgh School Board recently. The classroom accommodation in the new building will be 785, and deducting classroom places in the old building on account of formation of central hall, 228, the increased accommodation will be 557.

Meeting of the Royal Archæological Institute at Southampton.*

Monday, July 28, was devoted to another visit to Winchester, to inspect the cathedral and monastic buildings, under the guidance of Mr. W. H. St. John Hope. The party first assembled in the north transept of the cathedral, when, by the aid of a large plan with movable flaps, Mr. Hope explained the architectural history of the building and the successive changes it had undergone, basing his remarks on the paper written by Professor Willis in 1845. Recent investigation has, however, demonstrated the need for revising the accepted theories, and Mr. Hope showed that in addition to the tower over the crossing, the church most probably had a single western tower with side wings, like Ely, instead of the two western towers hitherto assumed. He also claimed that the thirteenth-century work at the east end was at least thirty years later than the episcopate of Bishop Godfrey de Lucy (*ob.* 1204), to whom it has long been assigned, and that although the plan was probably Bishop Godfrey's, the only remains of his work were to be seen above the vaults, where there was evidence of three transverse gables on the south side for which no provision existed now below. His corbel table also remained on the north side, but there the aisle had a continuous roof and no gables. Mr. Hope further urged that the ascription of the poor west front and the adjoining bays of the aisles to Bishop William of Edington be abandoned, the style being far more in accordance with work known to have been in progress under Bishop William of Wykeham in 1371. The Dean of Winchester said that, as regards the west front, he had come to the same conclusion as Mr. Hope, and he was glad to have his opinion confirmed by so high an authority. Mr. Hope afterwards conducted the party over the church. By the kindness of the Dean several of the reliquary chests had been temporarily removed from the side screens of the presbytery and deposited in the space behind the altar, where they were inspected with much interest. After luncheon the party reassembled outside the north transept, where Mr. Peers, by the aid of a plan, pointed out the relative positions of the Old Minster, the New Minster, and the "Nunnaminster," and gave his reasons for believing that the predecessor of the present cathedral stood on the north side of the existing nave. Certain foundations that had lately been opened up by excavation Mr. Peers considered were part of the buildings of the New Minster, erected shortly before its removal to Hyde in 1110. The party next resumed the perambulation of the church and the remains of the monastic buildings under the guidance of Mr. Hope, and, after inspecting the remains of the chapter-house, the kitchen, and the cellarer's building, in the cellar of which is preserved an original thirteenth-century table with carved stone legs, proceeded to Dome Alley, a double row of early seventeenth-century houses, with ornamental lead gutters and spouting. Mr. Hope gave reasons for assuming that this occupied the site of the monks' infirmary. Finally, the Deanery, anciently the Prior's house, was reached, and here the Dean of Winchester and Mrs. Stephens hospitably received the members at tea. The Dean also described the leading features of the house; and after inspecting the remains of the great hall, now divided up into the drawing-room, dining-room, and a series of bedrooms above, the party returned to the station *en route* for Southampton.

In the evening the annual business meeting of the Institute was held, when new members were proposed, and the Report of the Council was read, which showed that the Institute was in a flourishing condition, especially with regard to its finances. Reference was also made to the satisfactory arrangements that had been made by the incorporation of the greater part of the library with that of the Society of Antiquaries. The selection of the place of next year's meeting was left to the Council. The concluding evening meeting was afterwards held, when votes of thanks were passed to all those who had contributed to so successful a gathering.

On Tuesday, the 29th, a special train was in readiness to convey the party to Bishop's Waltham, where Mr. Hope described and explained the ruins of the ancient palace of the Bishops of Winchester. One of the

* Continued from p. 102 ante.

towers and the foundations of a large hall and an apsidal chapel are the chief remains of the house built here by Bishop Henry de Blois, but the Norman buildings have partly given way to a large hall and kitchen, &c., the work of Bishop William of Wykeham, who died here in 1404. Another range, perhaps the brewhouse and bakehouse, also of the fourteenth century, remains in the outer court, and the whole site is surrounded by an excellent brick wall, the work of Bishop Thomas Langton (*ob.* 1500-1). The journey was next resumed in carriages to Warnford, where, after luncheon, Mr. Hope described the remains of the early thirteenth-century house of the De Ports, consisting of a lofty hall with arcades of three bays, and the buttery and kitchen with great chamber above. One of the four original pillars is still standing to its full height of 25 ft., but of the rest one has disappeared and the others have been reduced to a few feet in height, probably on account of the destructive ivy, which has the surviving example in its deadly grip. It was resolved that the attention of the owner be called to the desirability of saving from further destruction the remains of so interesting and unusual a building. The parish church was next visited under the guidance of Mr. Micklethwaite, who called attention to the fine late Norman tower and the interesting seventeenth-century screen and choir fittings, as well as the thirteenth-century inscriptions over the south door and on the north wall. That on the north side is as follows :—

† ADAM DE PORTV BENEDICAT SOLIS AB ORTV GENS CRVCE SIGNATA PER QVEM SVM SIC RENOVATA.

That over the south door is surmounted by a Saxon sundial, and reads :—

FRATRES ORATE PRECE VESTRA SANCTIFICATE TEMPLI FACTORES SENIORES ET IVNIORES. WILFRID FVNDAVIT BONVS ADAM SIC RENOVAVIT.

Corhampton Church, a small and Late Saxon building, consisting of a nave and chancel, was next inspected, and explained by Mr. C. R. Peers, who called attention to the pilaster strips, the long and short work at the angles, and the fine north doorway, now blocked. In the chancel is an interesting early stone chair. On the return of the party to Bishop's Waltham the members were hospitably received at tea by the Vicar, the Rev. J. P. Nash, who also explained the chief features of the parish church, an interesting structure, chiefly of the sixteenth and seventeenth centuries ; it also possesses a fine Jacobean pulpit.

Wednesday and Thursday, July 30 and 31 were devoted to a special excursion in the Isle of Wight. The party, which numbered about forty, including the President, Sir Henry Howorth, proceeded first to the headquarters at Newport, where the maces and other civic antiquities, and the parish church and communion plate, were inspected before luncheon. A move was afterwards made to Carisbrooke, where the remains of the early Roman villa were described by Mr. Hope, and the parish church was inspected under the guidance of Mr. Percy G. Stone, who had charge of the party. The castle was next visited and described by Mr. Stone, who has lately carried out some judicious repairs in the gatehouse and other portions. The clumsy botching with cement visible on the keep entrance and elsewhere is due to the Office of Works. By the kindness of Lady Adela and Mr. Cochrane, the deputy coroner of the island, the interior of the castle buildings was inspected, and after ascending to the keep and viewing the great wheel of the well, the party returned to Newport.

On Thursday carriages were in readiness, and after a lovely drive along Arreton Down, a visit was paid to Arreton manor-house and the parish church, which were described by Mr. Stone. The manor-house is an early seventeenth-century building with some good panelled rooms, all in admirable order. The church is an interesting structure, chiefly of the thirteenth century, but the west wall is Late Saxon work, with doorway and window over. The drive was next continued to Brading, where a brief inspection was made first of the well-known Roman villa. After luncheon a visit was paid to the church, which was described by the vicar, the Rev. E. Summers, who called attention to the many interesting tombs of the Oglander family. Before resuming the journey to Yaverland, Mr. J. H. Oglander gave some account of the ancient Corporation of Brading. Yaverland Church, a small and much-restored edifice, was described by Mr. Stone as practically the chapel to the manor-house hard by, a good example of the seventeenth century with some nice woodwork about the staircase. The church contains nothing of interest. The last place visited was Godshill, where the church, an interesting and little-injured building, was described by the vicar, the Rev. P. M. Bartlett. It consists, practically, of two naves and chancels, side by side, with north and south transepts and a western tower, all for the most part of the fourteenth and fifteenth centuries. There are a number of late tombs, including the alabaster effigies of a knight and lady of Derbyshire work, and some good woodwork dating from the Laudian revival. The return of the party to Newport brought the meeting to a successful termination.

It will be seen that in addition to the cathedral and monastery of Winchester, monastic remains were inspected at Romsey, Porchester, Netley, Beaulieu, and Tichfield. The castles included Winchester, Porchester, and Carisbrooke, while domestic architecture was represented by the foundations of the Roman houses at Carisbrooke and Brading, the twelfth-century buildings in Southampton and in the episcopal palaces at Wolvesey and Bishop's Waltham, the thirteenth-century hall at Warnford, the fourteenth-century buildings at Bishop's Waltham and in Porchester Castle, the fifteenth-century work at St. Cross, the stately sixteenth-century gatehouse at Tichfield, and the Tudor house at Southampton, and the seventeenth-century houses at Arreton and Yaverland and Bishop Morley's fine building at Wolvesey. The parish churches included work of all dates, from Late Saxon times down to the present day.

It only remains to add that the weather was propitious throughout, and the meeting in every way a most enjoyable and well-managed one.

MAGAZINES AND REVIEWS.

THE *Quarterly Review* for July contains a very interesting article on "The Depths of the Sea," dealing in part with the history of the investigation into the character and configuration of the surfaces which form the bottom of the ocean, and the gradual improvement and development of the instruments of investigation. The remainder of the article deals with the Fauna and Flora of the deep sea. The article on "A Council of Trade," suggested mainly by the American shipping combination, though it hardly touches our immediate subjects of interest, deals with a subject most important to the general well-being of the country, viz., the means to be adopted of keeping together and developing our world-trade against active competitors. The main argument of the article may be represented by the following quotation :—

"One fact is incontestible, and that is, that this country is exposed to more serious emergencies, and to keener and more formidable competition, than ever in its previous history. Now the danger to England lies in the fact that she has so long been the cradle of industry, of inventiveness, and of enterprise, that faith in her star appears to be an ineradicable principle of her people. There is a truly British conviction that we shall sooner or later come out at the top, and to that conviction, unaided by sufficient efforts to secure its justification, it is to be feared we may cling too long.

Once the emporium of the world's commerce, England has taught other nations to manufacture, to trade, and, what is almost more serious for her, to carry for themselves. This decentralisation, so far as Great Britain is concerned, has been in progress for the past half-century, and was accentuated by the opening of the Suez Canal, when the Mediterranean and other countries instituted Eastern trading-fleets of their own, carrying their own goods, importing and exporting free of toll to Great Britain. The same process has been going on in many parts of the world ; and it long since became inevitable that, as the great distributing centre of trade, this country must, to a considerable extent, lose her commanding position.

The process has, of course, been gradual, and many compensating advantages have served to mitigate the loss. Owing, however, to recent extraordinary and sensational developments, it becomes imperative to consider this country's position ; and it is scarcely necessary to point out that the more immediate risk in such consideration is that hasty expedients, legislative or otherwise, may be advocated and adopted without that systematised inquiry and study which sound business principles demand. With full respect we submit that at the present moment no machinery of State exists for such a study of our national commercial policy as a whole."

As a whole, the *Quarterly* is an exceedingly strong number, but the other most important articles are on subjects which it is not within our province to comment on.

The *Magazine of Art* has an article on the work of a young artist, Mr. Walter West, whose illustrative designs have both charm and originality, and there is an admirable book-plate design in which the portrait (we presume) of the fair owner forms the central incident. We quite agree with the opinion expressed in the article on the Salons of 1902, that four or five hundred of the pictures in the New Salon ought not to have been hung. Among those selected for illustration we are glad to see M. Cottet's "Messe Basse en Hiver," a work of real power, already mentioned in our pages. There is an article by Prince Karageorgevitch on "The Later Works of Eugène Carrière," a painter who in our opinion has obtained a following beyond what his real powers would entitle him to, by the adoption of a mystical (or misty) and eccentric manner. An article on "The Scenery of Charles Kean's Plays" (that is, of the plays produced under his management) recalls and illustrates the talents of some of the eminent English scene painters of that generation. In the architectural portions of his Shakespeare revivals Kean was assisted, as noted in the article, by the late Mr. George Godwin. The editor contributes an article in memory of Benjamin-Constant. An article on "Mrs. Philip Newman's Jewellery" gives us some illustrations of jewellery which has the merit of being refined and artistic without eccentricity—a merit rather too uncommon at present.

The *Art Journal* contains an article on "The Best of Richard Doyle," dealing with the work of that gifted humourist in his more serious moods—a side of him which is not popularly known ; and a continuation of the notes by Mr. Walter Crane on the Turin exhibition. Cerne Abbas, the buildings and the district, is the subject of an article written and illustrated by Mr. Arthur Tomson. Mr. Bromhead contributes an article on "Doves and Pigeons," illustrated by Miss Allport's pretty sketches, which are probably the real *raison d'être* of the article.

The *Architectural Record* commences with an article consisting of a well-deserved tribute to M. Nénot, the architect of the New Sorbonne, written by M. Augé de Lassus, and we presume translated from the French. No living architect better deserves praise and recognition for the fine qualities displayed in his great building, and the energy and ability with which he has carried out such an important piece of work. To be sure it may be added that French architects are fortunate to live in a country where such great opportunities are found for them, and where—better still—their abilities find fitting recognition. In England it is seldom indeed that an architect has such a chance as M. Nénot has had in the Sorbonne, and if he had it, he would probably meet with neither gratitude nor recognition except from his professional friends. "The New Cathedral at Westminster" is the subject of an article by Mr. F. Herbert Mansford. The article, though expressing warm admiration for Bentley and for his great building, is not written in any spirit of extravagant eulogy, but is tempered by some judicious criticism ; an article in this spirit is in reality a much better compliment that mere adulation. Mr. Mansford is not surprised that many people find the tower too thin in proportion ; he does not observe, however, what might very well be observed, that it is hardly possible to form a just idea of the tower until the lantern stage is completed, as we cannot till then realise exactly the character that is aimed at. People in London (we do not know whether Mr. Mansford is English or American) go about saying that the Campanile looks like a chimney ; when they see the lantern finished they may realise that this stern plainness in the stalk of the tower is deliberately maintained in order to give effect to the lantern ; like so many of the mediæval towers of North Italy, it represents, or will probably be found to represent, a decorative lantern pushed high into the air on a tower in which nothing in the lower part is allowed to detract from the concentration of effect on the lantern. An article on "L'Art Nouveau" is contributed by a French art-tradesman, as we suppose he may be called, M. Bing, who has established a manufactory for the production of the kind of decorative art in furniture and accessories which he says one of his critics has described as "French twist" ; a happy expression for which we thank the

said critic, whoever he may be. M. Bing is persuaded that he is an apostle of a new life in French art; but spasms and contortions are hardly to be accepted as a sign of healthy life.

The *Berliner Architektur-Welt* is almost entirely occupied with the illustration of one building, the Villa Stolwerk, built from the designs of Herr Bruno Schmitz. Externally it is a large mansion of irregular outline, in which the materials of a somewhat *rococo* classic style are treated with a freedom producing almost the general effect of a Mediæval grouping. The principal interest lies in the numerous illustrations of interiors and decorative treatment; and if there is much with the taste of which we cannot sympathise, no one can deny its extreme cleverness and originality. Those who want to realise what the new German taste is in its best form will find the August number of the *Architektur-Welt* of considerable interest.

In the *Architektonische Rundschau* we find an example of the hard unsympathetic modern Gothic of Germany in the illustrations of the Paulus-Kirche at Stutgard. The geometrical elevation of a new hotel in Vienna, by Herr Otto Wytrlik of that city, is at all events free from the commonplaces of decorative treatment which such buildings usually present in England; it is a mass of wall pierced with rows of square-headed mullioned windows, the plainness of the whole being relieved by flat decoration on part of the walls, apparently tiling. The treatment of the roof balustrade is novel and picturesque. On one of the balconies of the circular pavilion at the end sit draped female figures holding aloft horizontal metal circlets from which electric lamps depend. The plan is not given. This is a design certainly out of the commonplace, and both pleasing and suitable for the class of building. The remaining illustrations of the number are not of special interest.

The *Artworkers' Quarterly* contains a paper on "Studies of Birds for Decorative Purposes; from Nature and Ancient Examples," in which the illustrations are quite admirable, both those taken from ancient examples, and those which are direct studies from nature, but with a decorative treatment—studies of the main lines rather than of detail. They are by different artists, whose names are given. Mr. Percy Dearmer, a very competent authority, contributes his second article on "Church Vestments." The criticism on the Church Crafts League Exhibition contains some remarks which we think are not uncalled for, in regard to the rather exaggerated pessimism of the League criticism as to "Art having been divorced from the Church" &c.; the writer suggests that the real fact is that church art has suffered, no doubt, from imitation and from the trade spirit pervading it, but not more so than secular decorative art. There is something in this, though we do think that what is called "Church art" has been rather peculiarly the prey of the mere mediæval imitation spirit.

The *Antiquary*, in its "Notes of the Month," draws attention to the threatened destruction of the earthwork near Dunstable known as Maiden Bower, and hopes that steps may be taken to avert it. We entirely concur; the owners of such relics ought to be taught what a responsibility rests with them for preserving relics of the past which, once destroyed, can never in any sense be replaced. In some cases, we are inclined to think, such antiquities are allowed to be destroyed not so much from perversity as from a real ignorance of their historic value. "Rushlights and Early Candleholders in the Isle of Man," with photographs of numerous examples of these Manx implements, is a curious study in utensils which, though obsolete, are not so ancient as might have been supposed; the Isle of Man is a stronghold of ancient custom, and it appears that the use of rushlights survived there till within the last half-century. "Candles were also made by dipping a linen rag or twisted cotton wick into melted fat, and holding it up to cool; the process being repeated until it was of sufficient thickness." This kind of rag candle, in the making of which necessity is the mother of invention, was in still more recent times the extemporised candle of the farmer or squatter in a new district in Australia, (we forget the local name given to it, but it had one), and may be still in use in some half-reclaimed districts of Australia. Mr. J. A. Rutter contributes an article on "Moated Mounds," a title which seems rather confused in its etymology, since "mound," "mote" or "mota" appear to have been really the same thing—the conical mound with a ditch round it which was formed by the extract of the materials for the mound. The word "moat" in the title seems therefore to be used in its derived and popular sense of a surrounding ditch, but it really meant the whole thing, and a "moated mound" is really equivalent to a "moated moat" (using the modern spelling). The ultimate object of Mr. Rutter's article, which is rather desultory in its arrangement, seems to be to suggest that there is another form of early earthwork to be taken account of, "in which the place of a mound is taken by a banked enclosure." He gives a list of the examples he includes in this category. The subject is not concluded in the present article.

The *Nineteenth Century* contains an article by Sir Robert Hunter on the "Reconstruction of Hainault Forest"—the legal reconstruction that is to say, by which it is proposed to acquire and preserve for ever as a recreation ground the really beautiful portion of Hainault Forest, towards Chigwell, which is still left. As the writer observes, many people who are familiar with Epping Forest both by name and by sight, hardly know of the existence of the beautiful tract of woodland, finer than anything in Epping Forest, which still exists towards the eastern end of the tract of country called Hainault Forest, great part of which is now "forest" only in name. It is to be earnestly hoped that the proposed purchase will be effected, for it would be lamentable that such a piece of natural forest as this should be reduced to building land. Sir Robert Hunter gives the history of Hainault Forest, once part of one continuous forest of which Epping is another part; and gives a map of the district, which by the way, is without a scale. To the same number Mr. C. L. Eastlake contributes an article on "Old Masters and Modern Critics," an enquiry into the value of certain critical writings on art. He bestows a good deal of attention on Ruskin and Morelli, about the former of whom he says some things which have already been said in these columns and elsewhere. "It is difficult," he says, "to reconcile Ruskin's advocacy of the school once known as pre-Raphaelite with the extravagant homage which he paid to Gainsborough; or to understand why he deprecated, in the field of ordinary landscape-painting, topographical inaccuracies, while Turner, whom he extolled to the skies, so frequently committed them with an easy conscience." He might have put it more strongly than that, for Ruskin actually described and praised Turner's alterations in the facts of a landscape, and invented reasons for them, which were probably never present to the mind of Turner. There is a great deal of truth in Mr. Eastlake's article—wholesome truth; but we do not know whether his position is quite maintainable, that "a man who has to pass an opinion on any representation of nature—whether it be a human figure, a beast or a tree—should at least be able to draw correctly himself." Does it follow that his opinion is worth nothing otherwise? Hardly, we think. A man may surely be able to see that the representation is not an accurate reproduction of the model, though he may not have the technical power to show how to do it himself. We admit that the real value of outside criticism is more in regard to the spirit and tendency of art in regard to technique; but bad technique may nevertheless be evident to those who cannot draw themselves, as bad verse may be evident to those who never wrote a line of poetry.

Macmillan contains a thoughtful article by Mr. William Potts under the title "What was the Renaissance?" We have not space here to follow out the writer's argument, with which in general we are quite in sympathy; but his conclusion is that the Renaissance was neither a new birth in Art or in letters—that the new movement in Art and in Literature was not the essence but the accompaniment and consequence of a change in the mental attitude of men, which might be described as consisting in "the untrammelling of the human mind from its bondage to the authority imposed upon it by the religious, political, and social systems of the Middle Ages;" which he proceeds to illustrate by the analogy of the change from the Mediæval mullioned and stained window to the unobstructed openings of the Renaissance window. The Mediæval window, picturesque in itself, shut out the light of day and the aspect of Nature; the Renaissance window let them in. The parallel is an apt and suggestive one.

The *Century* has an article on "The New New-York" by Mr. Randall Blackshaw, with illustrations, some in colour, by Mr. Jules Guérin. The article describes, of course, what is being done or projected to render New York a finer city in the æsthetic sense. "To-day," says the writer, "a New York is coming to birth which bids fair to vie, if not in historic interest, at least in magnificence and beauty, with even so splendid a capital as that of France." This will hardly be done, however, by the erection of such monstrosities as the high building at the acute angle of Broadway and Twenty-third-street, sarcastically called "the flat-iron," which forms one of the illustrations, and of which we do not notice any condemnation in the text. There seems no doubt, however, that a great amount of sumptuous building is contemplated in New York, and with the talent of American architects much of this will certainly be of a high class. Will it be possible to get rid of the elevated railway? Mr. Blackshaw observes, and we should think with truth, that what was given to New York with one hand in the making of Central Park, some forty years ago, has been taken away with the other hand by the making of the elevated railway. There seems now to be a leaning towards subterranean methods of rapid transit, which will not spoil the appearance of the city. In the illustrations of existing buildings there seems to be rather too much of an attempt to throw a kind of picturesque glamour over them by representing them almost *en silhouette*, as if seen on a misty day. There is a certain element of trick in this; but the article is a very interesting one nevertheless.

In *Scribner* "The Field of Art" section deals with "Artistic Photography Once More," the "once more" rather implying that one has had enough of the subject. The article consists of only a brief comment on two photographs, or rather reproductions of photographs by Mr. J. B. Carrington, consisting of subjects showing tree-stems in winter, with snow on the ground. Mr. Russell Sturgis, whose initials sign the article, instances these practically almost black and white subjects as examples of a success that may be within reach of the photographer. They are, moreover, in their nature entirely still and quiescent, and in that respect also suited for photography. This is not going very far in support of "artistic photography," but the results in this case are not unsatisfactory. An article by Miss Edith Wharton on "A Midsummer Week's Dream" in Italy is illustrated by some charming sketches by Mr. Peixotto—better than any photographs.

In *Harper* Professor Duncan, of Washington College, gives a popular but very logically written exposition, under the title of "Radio-activity," of Becquerel's discovery of the property of certain substances, of which the most important is the almost theoretically known substance radium, to emit rays of light which will penetrate apparently opaque substances. The successive experiments by which Becquerel arrived at his results are very clearly described and illustrated. Mr. Abbey's illustrations to "The Deserted Village" are concluded in this number. The drawing of the stern of the ship by which the emigrants are departing is a very good piece of work, perhaps the best of the series. The figure subjects in general have hardly seemed to us to rise to the feeling of the poem.

The *Cornhill* contains an article by Mr. E. Kay Robinson on "The True Ordering of Gardens"; not (ostensibly) an essay on the vexed question of the formal or informal garden, but mainly on the way of making the most of the flowers and shrubs to be grown there. We do not quite understand, however, what the writer is driving at in his advice, in emphatic italics, to "make no flower-beds." As far as we can make out, the flowers are to be grown in a quasi-natural manner out of the grass, and "borders" as well as flower-beds are tabooed. The only good reason that we find given for this is that in winter the flower-bed is only an unsightly expanse of brown earth; which is true. But a garden is after all a conventional and not a natural creation, and no kind of design can well be got out of it without marshalling the flowers in some order.

The *Pall Mall Magazine* contains an article by Mr. M'Grath on "Marconi's Ambition; the linking together of Greater Britain," the text

of which lies in the following quotation from a conversation with the inventor :—

"'I shall not be satisfied,' said Mr. Marconi to me at St. John's, 'until I can signal direct to New Zealand across the Isthmus of Panama, and send messages to India across the intervening land, using my station at Poldhu for the transmitting of the aerograms to both countries.'

Therefore we Britishers, of the homeland or the colonies, recalling that his work has been virtually all done under the British ægis, may fairly claim that wireless telegraphy is "a shuttle in the Empire's loom that weaves us main to main"; and may look forward with pleasurable anticipation to the day when it will link together every section of Greater Britain."

The writer, who is evidently well up in his subject, proceeds with a detailed description of the history of Marconi's method of signalling, with the conviction (which we fully share) that a great and influential future is before it. An article under the title "In Terra del Fuegan Waters," by Mr. W. S. Barclay, gives some new light on the scenery and local characteristics of an out-of-the-way quarter of the globe.

In the *Revue Générale* M. Primbault concludes his very complete and impartial survey of the present condition of the subject of aërial navigation. As a summary of the position hitherto attained it is an exceedingly comprehensive and useful essay, in which those who have not time to go into the subject in detail may find the main facts and experiences given in a concise form. The writer's conclusions are not optimistic. Some progress he admits has been made, and some partial successes gained, but he declines to believe that aërial navigation will ever arrive at at such a development as to materially change the conditions of life. It will always, he considers, be hampered by the difficulty of getting sufficient driving power without adding a weight practically impossible to lift, except by balloon surfaces which will offer too large a surface to the wind to have any chance of contending against it; that, in fact, it comes to this—we cannot increase driving power without a disproportionate increase in weight, and we cannot increase lifting power without a disproportionate increase of wind pressure.

The *Essex Review*, which seems to go on in a spirited manner in spite of having finished up the churches of Essex, has an interesting article on "Vanishing Essex Villages," describing and illustrating some villages in a little-known corner of the county. Fobbing is one of these, and it is said to be now slowly but surely getting engulfed by the surrounding brickfields. This and other villages are in fact too near London to escape transformation; and the writer suggests that as there are societies for preserving ancient monuments, so there should be societies for preserving ancient villages. But how is it to be done, except by buying the land around them? And that, we fear, is not "within the range of practical politics." A suggestion in another article, as to the real origin of the names of the "Green Man" at Leytonstone and the "Woodhouse Inn" at Wanstead, is interesting; we will only mention here that both the terms are shown to have been formerly used as synonymous with that of "Salvage Man" or "Savage Man" which we meet with in Elizabethan drama; men dressed in hairy skins to represent wild men of the woods in masques and pageants.

To the *Gentleman's Magazine* Mr. J. Ellard Gore furnishes another of the useful articles in which he gives in a popular form the outlines of some of the main questions connected with astronomy. The present one is concerned with Laplace and "The Nebular Hypothesis," which indeed, after a century of conflicting argument, may almost be said to be passing out of the region of hypothesis into that of accepted cosmical history. Mr. Beach Chester's article, "On the Highway to High Savoy," is a pleasantly written account of a country trip in France, and of the monuments and memories connected with the places visited or passed.

ST. BOTOLPH CHURCHYARD, BILLINGSGATE.—On July 23 was opened the burial-ground belonging to the church and parish of St. Botolph, which the rector of the recently united parishes of St. Mary-at-Hill, St. George, Botolph-lane, and St. Botolph has decided to utilise for open-air services and addresses. The church of St. Botolph was not rebuilt after the great fire, the benefice being added to that of St. George. The church of the latter parish will shortly be demolished, in pursuance of a scheme framed under the Union of Benefices Acts.

MODERN ARCHITECTURAL IDEALS: AN AMERICAN VIEW.

WE have just received the Report of the 1901 Convention of the American Institute of Architects. These Reports, like those of the French Architectural Congresses, are issued a very long time after date; but the Presidential address of Mr. Peabody, who was President of the last Convention, has lost none of its interest, as it deals with general considerations of the aims and ideals of the modern architect, and not with passing or local subjects; and many of our readers may be interested to hear the views on this subject of an eminent American architect. The following is the address, omitting only the opening paragraph, which referred to the loss of the President :—

Our profession has many causes for congratulation at this Thirty-fifth Annual Convention. There has been a large addition to our numbers since we last met. None of us can be indifferent to the fact that eager demands are coming from all parts of our land for a high standard of artistic work, and that the pecuniary responsibilities which are committed to our care are constantly growing. As large fortunes and important business combinations increase in number, an ever larger proportion of riches will continue to be spent on the patronage of Art. All men welcome these expenditures by the rich. To our profession they offer opportunities never before presented in this country. For all these reasons we have no cause to complain of our material prosperity.

Therefore, at such a friendly conference as this, it is all the more desirable that we should see clearly whither these favouring gales and currents are speeding us, and make sure that our gear is strong and our compass true. A review of the aspect and tendencies of our professional life is opportune. To what is it leading us? What opportunities does it offer? How shall we train our young men? How can we make this American Institute a more serviceable instrument? In short, I want to discuss with you the ideals towards which to-day we may reasonably aspire as architects in active practice.

First of all, we note a vital change that has made much progress in the last few years. Once an architect could make with his own hand every drawing for his building, and give to it throughout his own touch and feeling. I fancy there is no one of us with a true artist's soul who does not dream of this as the ideal life for an architect. Nor is it an impossible life, and if a man is contented to do small things well, and can find clients who will pay him rightly for such artistic work, I commend this life as a happy and useful one. But though such a serene and artistic career is open to a few rare men, it is not offered to most of us; and generally where a man is faithful to this ideal life he finds himself suddenly the steward of a larger trust. Buildings of importance will not await one man's time. Modern building, and especially American building, implies a rapid campaign. Where it used to take ten years to spend a million dollars, it now takes as many months, or the financier stands aghast as interest runs to waste. The modern building methods and the passion for costly structures are the exigencies from which have arisen the need of large office forces. As in business, trade has massed itself into great consolidation and combinations, so commercialism has brought new problems to our art. It is a surprising fact that in democratic America, of all places, a country where individual exertion and independent action is the mainspring of public life, the spirit of co-operation and combination has so largely supplanted in our art the productions of the individual. It is, perhaps, a thing to deplore that an architect's office should resemble a department store, or should be open to the derisive charge of being a plan factory. In contrast, the life of the single-handed artist architect may well be thought attractive. But it is a fair question, which is the most valuable to the community. The same men are going to do the work in any event. In the one case they are nerved to comparatively ineffective exertion by personal ambition and self-interest; in the other, they contribute what they can best produce, and where they are weak they are supported by better men. It is an old story. A farmer in the oil fields may refine his own kerosene and preserve his independence, but the Standard Oil Company can furnish better oil at a cheaper price, not only to him but to the peasant in Central China.

My intention, however, is not to argue the question nor to discuss whether by these new methods imagination and poetry are stifled. Perhaps we have had enough display of ungoverned imagination. Perhaps imagination that is valuable will make itself felt under any circumstances. I am not arguing. I only state a fact. We all recognise in these days that a man cannot be effectively both architect and builder as in mediæval days. It is only going one step farther to say that it now takes several men to make a good architect. Thus the large co-operative office is the most conspicuous feature of our recent professional life, and in many ways it is not an unwelcome one. Instead of individuals striving for public favour, clubs of artists are now engaged in this pursuit, and material success goes to those whose mutual confidence, *esprit de corps*, and professional skill are most highly developed. It is not a bad situation. It is not unlike the conditions which prevailed through great periods in the history of our art in other ages and other climes. We go to Florence and reverently tread her narrow streets, and people them with the gay, light-hearted artist folk of that golden period, when genius and talent so abounded that he was a dull architect who was not also poet and sculptor and painter as well. That community of interests among the artists and students, among the goldsmiths, painters, and sculptors of Florence, when Verrochio or Luini worked under Leonardo, and Rafaelle with Perugino—the one the master the other the helper—was it not somewhat like the life in our own ateliers? Truly it seems as if in some of our great cities, where the workers in the allied arts have joined most thoroughly in mutual endeavour, this ideal artistic life is well simulated. Still more complete was the union of master and student during the Middle Ages, when the art of building was so far left to the guilds that the names of the leading spirits have vanished into oblivion, though their work still speaks to us in lofty nave and peaceful cloister and towering spire. This unselfish oblivion is not to the taste of the modern world. It is one of the great objections of the artist to these large offices. But his fears have no very substantial foundation. The organisation of a great railroad does not stifle individual talent. It rather gives real genius its opportunity, and possibly it is well that mediocre ability should not obtain leadership. In humbler place it can join to its full power in the production of great works, and feel and say "Magna pars fui."

Let us then treat the large office as a fact, and when the head of it says "I," let us hope for his sake that he intends it as Admiral Dewey might, and let us not forget the man behind the guns without whom the guns are powerless. And when the young aspirant for fame in a large office talks as if he were the nameless ghost whose spirit pervades all the successful work of the office, let us remember how long the Army of the Potomac vainly struggled and fought before Grant's master mind turned that same armed machine to victory. Indeed, Grant, at the great surrender at Appomattox—a leader because of early discipline in the small things of the Mexican War; successful because of his innate firmness and his judgment of men and things; in victory a generous, knightly soldier—may well be an example to the heads of our large offices.

The next change that I note in our professional life is the great advance in architectural education. Most of us agree that the American boys that crowd our offices, alert, intelligent, active minded, ambitious, are admirable material from which to make artists. They are fast proving themselves to be such, and are making names for themselves in foreign schools and at home. How they shall best be trained is a vital question. How shall these young men who serve the guns now and are to command the ships later get the most thorough education? I suppose that question is put to most of you only too frequently.

Clearly, one answer is that they can pick it up in these large offices. If the apprentice system, which lasted so long in England, had any merit, it has vastly more when applied to life in one of our large offices. Surrounded by able workers, the young man leads, in a measure, the life that is offered by the French atelier, where the most potent influence is that of the "anciens." But, in our American office, there is no time to teach the history of art, the theory of design, and to cultivate the powers of imagination and representation. Probably

we all agree that the most interesting work which the profession has to offer—its highest refinement—is centred in the act of composition, of gathering and combining under the influence of imagination, or, if you please, of inspiration. It is a hopeful sign for the country that now and to-day business comes to those who are masters of this art. An education in an office plainly does not cultivate such powers. Nor do I believe with those who bow to that vague deity—pure design, that they are to be gained by the contemplation of Nature and the study of natural products. The art of architecture is necessarily conventional, and is bound up with the history and the life of mankind, and the egotist who tries to play his hand alone makes a mistake. His work will be good so far as it accords with the principles that civilisation has pronounced sound, and will fail when his self-appreciation prevails.

These powers of idealisation and of creative composition can be brought to life and nourished and strengthened by no other means but practice, in the same way that an athlete increases his strength; and for my part I believe that this practice is most conveniently obtained in a school of architecture, just as lawyers have found a law school a fitter place for training than a lawyer's office. The thirst for architecture that pervades this country, and that is shown in crowded architectural exhibitions and attempts at architectural building, is shown quite as markedly in the multiplication of these architectural schools. There are more of them than there are architects fit to teach them. The more modest schools find a field for their endeavours in serving young men who aim at being draughtsmen, and who cannot reach the better organised institutions. All these schools serve a good purpose in tending to spread a knowledge of architecture among the community at large, and it is to be remembered that a man may well study architecture without expecting to gain a living by it. He can be an important influence in his community in developing the love of the beautiful to which our country is now awakening.

But, as architects, we can take a really live interest only in the best organised schools. Fortunately, these are already doing work in which we may take pride. Indeed, I confidently look forward to their attracting students at an early day from other lands, as young foreigners now come to us to study engineering. The chief duty that the American Institute can have in architectural education must always be to foster this work of the highest grade and to make the best better.

Your Committee on Education, in their valuable Report last year, made many suggestions looking to this end, and lately the *American Architect* has suggested that candidates for admission to a school of architecture should be required to pass a tolerably severe examination in drawing from the round, such as is required for admission to the great Academies of Fine Art. This would in some ways place the beginners where graduates are now. This is an admirable suggestion. It would tend to increase, in primary schools, the teaching of drawing, which, so far as it is a means of delineation, I believe to be nearly as fit a subject of general instruction as writing. But though much is to be gained by raising the standard of admission, it is the standard of graduation that finally tests the school, and the need now is for high-class post-graduate work. Some of the schools foster this high-class work. In rare instances they produce work to vie with that done in France, and as they develop the enthusiasm and spirit that is the chief merit of the French school, it becomes less and less necessary to study in a foreign school. We now need scholarships for post-graduate study in the schools themselves. There are scholarships enough to support students in foreign travel. The clever boy can get abroad if he proves himself worth the investment; and, besides, desirable as foreign travel is, it becomes less and less necessary as books and photographs are more widely available. Scholarships that would support boys at such study not only benefit the recipient and enable him to study without visiting foreign lands, but the presence of such a class of workers in a school give it a power and influence that no amount of endowment or museums or teaching can equal. The best instructors that youth can have are companions further advanced on a good road. Hence, I ardently hope that such scholarships may be founded; and it is certain that those schools of architecture among us will quickly be distinguished as the real architectural universities which depend, not on the funds or buildings or number of students, but on their advanced graduate instruction and on a body of strong students banded together with *esprit de corps*.

Possibly the foundation of a prize, open to competition between these graduate schools, would do something to foster this very desirable advanced education. The American Institute is now about to enter into relations with these different schools by accepting their diplomas as a standard of admission. It might very properly take the charge of such a grand prize.

There is yet another means of education which prevails with us and which deserves our hearty encouragement. I mean the draughtsmen's clubs which join, with good fellowship, all aids to study. The Architectural Club in Boston maintains many classes, and is the instrument of great good in our city. I think the fact that these young men govern themselves and direct their own work is one of the reasons that the club continues and prospers. Such organisations generally do prosper while those in command are interested. To insure perpetuity it is necessary for the active members to know when their turn is over, and to yield willingly to the next generation as they themselves proceed to the work of older men. Through all my professional life I have watched with interest the relations of the Architectural Association in London with the Royal Institute of British Architects, and have hoped for something of the sort in America. When a member of the Architectural Association comes into the active practice of his profession, he surrenders control in the Association's affairs to his juniors, and takes his part in the quite different work organised by his seniors of the British Institute. I have hoped that the Architectural League of America is to take that relation to our older body. At times it has assumed a spirit of opposition to us, but I fancy that attitude, together with an endorsement of any passing cult, is but temporary, for fads and special cults pass away, and only basic principles remain, and surely we represent nothing worthy of opposition. If the energetic in our profession will take hold and administer affairs better than we have been able to, we shall ask nothing better.

I suggest referring to a committee the question whether an alliance cannot be made, either with the Architectural League of America, or an association like it, which might become the instrument of the draughtsmen and younger architects. I would make it the centre for classes and club life, from which the older members, as they recognise that their turn is passed, would naturally graduate to the Institute. To their hands, when the proper time comes, we should gladly bequeath the American Institute. If to-day our youths are apt to think that in this or that case the duties of the Institute have not been properly performed, it will be their turn then, and I trust that they will do far better than their predecessors, who had no architectural leagues in which to prepare themselves for their work.

If our young men get their highest training in the schools, and if club life and voluntary classes are left to our youngsters to govern in their own way, with the active help and sympathy of their elders, what partly-performed duties or what opportunities lie before us which may justify the existence of this Institute and the labours of its members?

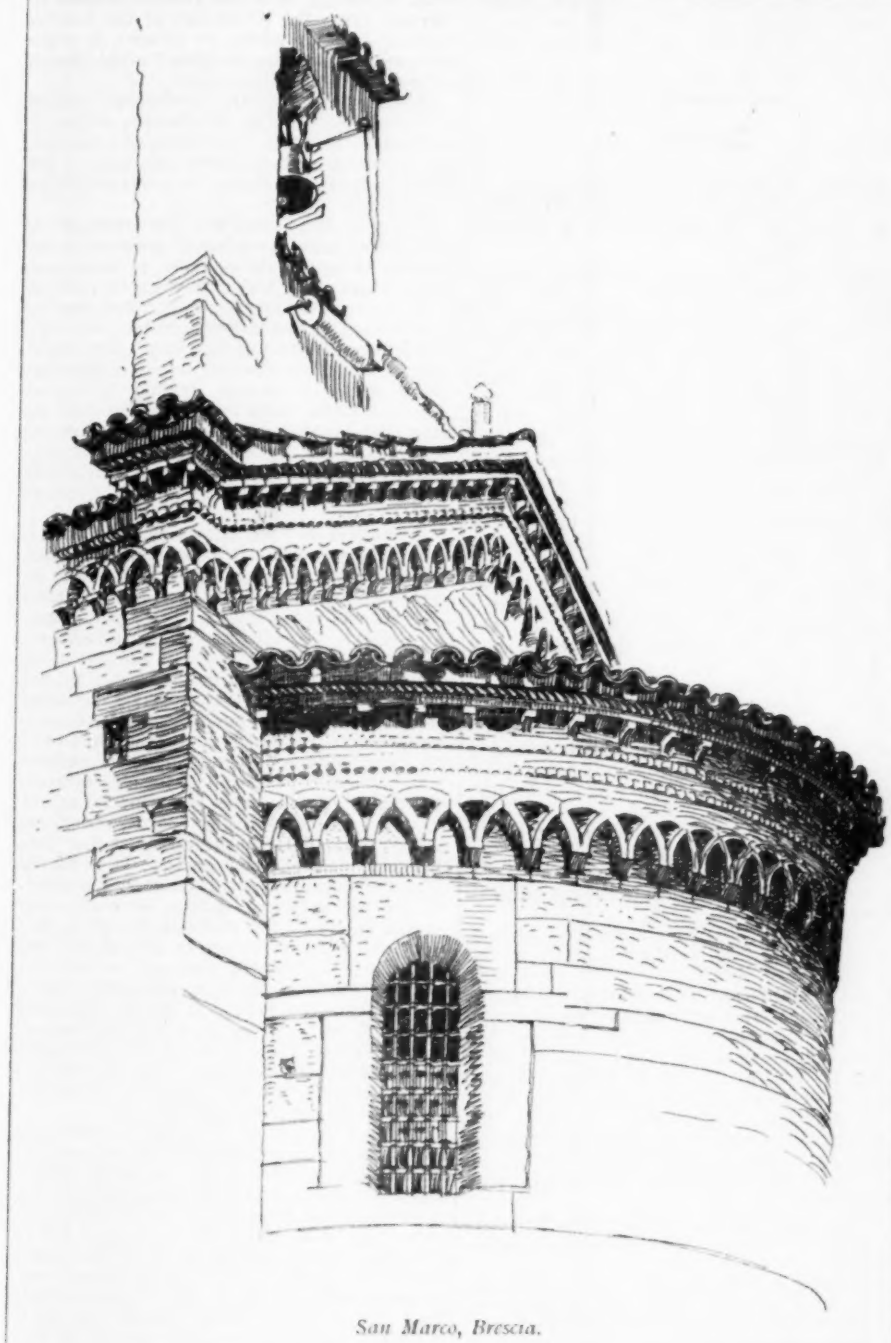
We can only measure the amount of good the Institute has done by its output. Many a man who cares little for it, benefits because others have cared. Many a man, outside of our numbers, is more respected in his community and has a more certain livelihood because the Institute has proved itself a reasonable public body. Certainly, through its influence, the perils and hardships of competitions have been greatly mitigated. But all these are small and selfish ends. The real value of the Institute lies in its opportunities, in its openings for useful work, and mutual high endeavour. Thanks to the wisdom of its founders, I think it has been a potent means of good. Thanks to them, it has none of the features of a selfish trade union. In a trade union a man's powers and skill are handicapped for the general good, but with us a member has entered into no engagements of any kind except that he will honourably practice his profession. Our compact is rather that of the ancient guilds into which no one could enter who was not a master workman. We seek to make membership a sign of established character. We are trying to make it impossible for anybody to be an Associate who has not thus established a name for honourable professional conduct, and for no one to be a Fellow who has not done really distinguished work. With the coming year, entrance to the Institute will be possible only through examination arranged by the Institute, or on presentation of a degree from an accredited school of architecture. I believe that the new tests will cause large additions to our numbers, because Associate membership, henceforth, is to mean that a definite and valuable standard of skill has been reached, and that from among this membership their comrades are to choose by honourable election the Fellows of the American Institute of Architects. To many young men these will, I doubt not, seem valuable inducements.

In its various chapters, the Institute has been and may be a power for good in scattered localities. Laying out cities, broadening avenues, arranging vistas, improving tenement districts, encouraging public art leagues and commissions—all are subjects which more and more engage the attention of our local Chapters, and in which they may readily prove themselves useful to their several communities, and now that American ambition turns towards the embellishment and beautifying of cities on grand lines, the Chapters can guide public taste and awaken public interest to schemes of artistic local improvement.

But, better than all this, a man through the Institute may have the good fortune to do something towards the raising of the standard of work and character in the country at large. During this year we have had unusual opportunities of this sort. We lent efficient aid to prevent unstudied and undesirable alterations in the White House which would have completely changed the character of that public monument. That was an unselfish and useful undertaking. Your members have been repeatedly called upon by Secretary Gage to serve as jurors for competition under the Tarsney Act, and have rendered willing service. Your officers have had consultations with several of the Government Departments relative to architectural work, and I think the immense improvement of Government architecture under the Tarsney Act may fairly be attributed, in part, to earlier action by the Institute. Our chapters protested against permission being given to the Pennsylvania railroad to cross the Mall in Washington. It seemed as if this protest were vain, as those who were most influential had given this up as a lost cause, but the Commission to consider the subject of the laying out of the City of Washington have not held this cause to be lost, and our action may yet prove to have been useful. We vigorously urged the appointment of this Commission on the plan of the City of Washington, and our anticipations as to the results of its labours are great. When our committee was urging the formation of the Commission before the Senate Committee, we were told that they had to grant it, as no man urging it was asking anything for himself. In such disinterested public service we are able to render good service to the State, and thus perform the highest duty that can come to us.

Perhaps you will agree with me in thinking that this year we might set before ourselves the task of urging the Government to appoint a permanent Art Commission. I commend this to you as an action well worthy the attention of a special committee.

Before I close, let me give one moment more to consider what effect this life of study and of active contact with a busy world has on the individual, for that is what finally interests us. An architect receives his training at college or in an office. He lives a busy life in the American business world. What does such a life bring to him, or what influence should it have on him? His occupations deal with art in its most conventional form; with hue and group, and texture and colour; with the history of art, and with drawing; and all the while he is rigidly bound to scientific construction, to business methods, and to commercial honour. There can be no great place among us for even an honest builder unless he is moved by artistic impulses, and can turn his building into architecture. There should be, on the other hand, no chance for any position, among architects, for the man who shields improper professional conduct under the excuse of artistic temperament. He



San Marco, Brescia.

is not only a thief, but a weak and feeble one, without even the courage to call things by their right names. The world sometimes excuses that attitude in shiftless men of genius, who are responsible for their conduct to nobody but themselves; but an architect is trusted with the property of others, and owes a strict account like other business men. In return, it is his happy fortune to direct the use of the money of others towards the higher products of man's imagination and skill. The world of poetry and romance lies behind all human occupations, but with us artists it is especially near the surface of our daily work. It is our chief function to cherish and increase the love of the beautiful in the daily life surrounding us. While doing this, business and routine often seem to repress the artistic impulses we most cherish. But it is doubtless our great blessing, that as we grope upwards towards the higher life of poetry and imagination, our feet must remain of necessity firm set on the bed rock of common sense and business integrity. Flowers blossom more freely when the plants are nipped back. Sir Walter Scott and Robert Stevenson might never have produced as they did but for pressure. Fortunate indeed are we that our daily work constantly awakens and draws from our imagination, but, at the same time, recalls us from dreamp dilettantism to hard work and active life and plain, honest, straightforwprd dealing. Our art makes the life of our community comfortable, beautiful, and stately. It keeps us in touch with higher things while holding us to earth. It forms good citizens. It trains useful men. We may envy no man's opportunities in life. Let us all be glad that we are architects! Let us all exult in the position that our art holds in our country to-day.

Sometimes at the seaside come days of ugly weather. The ocean is leaden and oily. The distant shores show hard and gray, or the fog sets in and all is enveloped in gloom. From far and near the coasters, heavy laden and storm beaten, crowd into the gloomy port. Then comes a morning when the fresh north-west wind sweeps clean the sea and sky. The dark clouds vanish and leave a world in its true colours, bright and clean and sparkling in the sunshine, and down the shore in a long procession go the white-winged vessels speeding on their several errands to the ends of the sea.

Sometimes troublesome clients and difficult contractors envelope our professional life in gloomy weather, and the worries and anxieties of business befog our mental vision. Then, haply, comes a time like this of meeting together, when it is given to us to see things in their true proportions and in a favouring light. The fogs lift and with the clearing weather the fractious clients and the office cares vanish into thin air. With cheerful courage our barques make for the open main; great ships with flaunting colours, solid coasters built for heavy work, the large and the small, with divers cargoes and bound to many a port, but sailing this morning in happy company, their canvas swelling to the breezes of hope and enthusiasm and confidence.

SAN MARCO, BRESCIA.

THIS drawing shows the apse of the tiny Church of San Marco at Brescia, in the style so characteristic of northern Italy, the building being of stone, and the ornamental cornices and mouldings in red brick with pantile roof as a capping. W. CURTIS GREEN.

COMPETITIONS.

NEW PREMISES FOR CHELSEA, BROMPTON, AND BELGRAVE DISPENSARY.—At their last meeting the committee of the Chelsea, Brompton, and Belgrave Dispensary adopted the plans submitted in a limited competition by Messrs. Sheppard & Burkinshaw, of 21, John-street, Adelphi, for new premises, and instructed the architects to proceed forthwith.

HARROGATE AND KNARESBOROUGH JOINT ISOLATION HOSPITAL.—The assessor has awarded the first premium to Mr. Geo. Hurst Stanger, C.E., F.R.I.B.A., of Messrs. Stanger & Stanger, Wolverhampton; the second premium being awarded to Mr. T. Stewart Inglis, of 52, Savernake-road, Hampstead. Forty-one designs were sent in.

THE HOUSING QUESTION, ECCLES.—The Health Committee of the Corporation of Eccles have resolved to invite competitive plans for the laying out of the insanitary area of Eccles, which comprises over 20,000 square yards in the town, and which is bounded by the main thoroughfare leading from Manchester to Liverpool and from Eccles to Barton. Provision is to be made on the site for the accommodation of at least 170 persons who may be displaced by the carrying out of the Housing of the Working Classes Act. The rentals of the houses which are to be erected are not to be less than 6s. per week, nor more than 8s. Sufficient land is to be retained in front of the area for the erection of business premises. Premiums are offered to architects of 50*l*., 30*l*., and 15*l*. for the plans respectively placed first, second, and third in order of merit.

DISTRICT SURVEYORS AND WOODEN STRUCTURES.

ON May 15 last the case stated between the Mayor, Aldermen, and Councillors of the City of Westminster and certain of the District Surveyors, upon the questions relating to the position of District Surveyors and builders with regard to the erection of wooden stands and other structures under Section 84 of the London Building Act (the licensing of which was transferred from the London County Council to the newly constituted boroughs under the London Government Act, 1899), was heard and decided in the King's Bench Division of the High Court. The following is the final order of the Court on the subject:—

"Upon reading the questions submitted for the decision of this Court, under Section 29 of the London Government Act, 1899, in the form of a special case agreed on between the parties, and upon hearing Mr. Manisty, of counsel for the Mayor, Aldermen and Councillors of the City of Westminster and Mr. Macmorran, of counsel for Thomas Henry Watson, William Alfred Large, Robert Kerr, Edward Dru. Drury, Charles Foster Hayward, Alfred Williams and William Hewson Lees, District Surveyors, acting under the London Building Acts, within the said City, this Court doth decide the said questions as follows videlicet:—

1. The powers, duties and liabilities of the District Surveyors with respect to the supervision or inspection of wooden structures, falling under Section 84 of the London Building Act, have not been transferred to the City Council and its officers, but the District Surveyors have no powers, duties or liabilities under the licences granted by the City Council.

2. Wooden structures falling within the said Section 84 are works of which the District Surveyor should have notice under Section 145 of the said Act in a proper case.

3. The right to receive the fees for such supervision and inspection, specified in paragraph 15 of the said special case, has not lapsed, nor has it been transferred to the City Council or its officers."

IMPROVEMENTS, PRINCE'S THEATRE, BRISTOL.—This building has just been reconstructed from plans prepared by Mr. Frank Matcham. Four statues of more than life size surmount the frontage, the design of Mr. G. S. Arrowsmith, of London. They represent Tragedy, Comedy, Music, and Dancing. A glass shelter is provided outside the chief entrances. The contractor is Mr. A. J. Beaven, of Bristol. The heating is carried out by Messrs. Skinner, Board, & Co., heating engineers, Bristol.

Illustrations.

WINDOW NICHE FROM THE CERTOSA, PAVIA.

THE illustration of the detail of a portion of the Certosa at Pavia should more correctly be called a window-niche than a window; it represents one of the two square niches, backed by panelling, which repeat and carry on the design of the windows of the entrance façade.

The illustration is reduced from a drawing by Mr. G. A. Paterson, of Glasgow, one of a set which gained him the Owen Jones Scholarship two years ago.

STAIRCASE, HARDWICKE GRANGE.

THIS staircase is a portion of the internal alterations and decorative work now being carried out from the designs and under the direction of Mr. E. Ridsdale Tate, of London. It is constructed of walnut, with a richly-carved balustrade, and the panels of the wall-framing are of pollard oak cut from an old tree "felled" on the estate.

The arcade on the landing and the great arch spanning the corridor at the foot of the staircase are also of walnut; the pilasters, dado framing, and frieze and cornice in the corridor are of oak, pollard oak being used for the panels.

A bronze group surmounts the newel. Richly ornamented modelled ceilings of Jacobean style in fibrous plaster have been placed over the staircase and corridor, and the electric lighting is arranged in a gallery forming the cornice around the walls of the staircase and along the top of the cornice in the corridor. At the opposite end of the corridor is the entrance to the dining-room, designed in harmony with the staircase and hall, which is reached through an angular porch near the foot of the staircase.

The contractors for the various works are:—Messrs. H. Willcock & Co., Wolverhampton (builders' work, joinery, and wood-carving); Messrs. Walter Smith and R. G. Wheaton, Fulham, S.W. (modelled plaster work); the Carlisle Fireproofing Co., Carlisle (fireproof floors); and Messrs. Drake & Gorham, Westminster, S.W. (electric lighting). Mr. T. Geldart acted as superintendent of the works.

HOUSES AT WINDERMERE AND COBHAM.

THE two illustrations which show the exterior of a house at Windermere, and the interior of the Hall in a house at Cobham, are from drawings by the architect, Mr. M. H. Baillie Scott, which were exhibited in the Royal Academy of 1900.

SOME MEDIÆVAL CROWNS.

IN addition to the article on the development of the crown, given on another page, some examples are here given of types of crowns, chiefly from painted glass. The three examples from the Priory Church of Great Malvern are from the large window at the north end of the transept, and represent Henry VII., his queen, Elizabeth, and their son, Prince Arthur. In the chancel of Iron Acton Church, Gloucestershire, is some good glass, including a circular medallion with a King's head, and an example of a triple crown from what is considered as a representation of St. Gregory. In the little church of Melcombe Bingham, Dorset, are some fine fragments of glass said to have been brought from the Abbey Church of Milton Abbas, not far distant. In the Abbey Church itself are two curious frescoes at the back of the stalls, representing the founder, King Athelstan, and his Queen, but of thirteenth century date. In the south window of the chancel at Trull, Somerset, are three figures, St. Margaret, St. Michael, and St. George; the first-named wears a crown of fleur-de-lys. At Deerhurst, Gloucestershire, is a crowned figure of St. Catherine, in painted glass. The three other examples given are: 1. From the Coningsby Hospital in Hereford (a late quarry with a coronet and plume of feathers). 2. Two shields in stone from the bay window on the west front of Brympton House, near Yeovil. 3. A late example of a rose and crown from a wooden pulpit in Pitney Church, Somerset. In almost all churches where stained glass remains in any quantity, examples of crowns will be found. Those here given will serve to illustrate their great variety of form and design.

Books.

Companion to English History (Middle Ages). Edited by FRANCIS PIERREPONT BARNARD, M.A., F.S.A. Oxford: at the Clarendon Press. 1902.

ANY book issued in furtherance of the movement known as "University Extension" is opened with some of that suspicion which, rightly or wrongly, clings to the movement itself. But in the case of the book before us any such suspicion would be unjust, for, with one or two exceptions, the subjects are treated as adequately as is possible within the limits of a single chapter; and if the manner suffers inevitably from condensation there is little fault to be found with the matter on the score of superficiality. The purpose of the book is to throw light upon certain chosen aspects of mediæval life and activity which are continually cropping up in the ordinary course of historical reading, but which are barely touched upon in the common text-books. On the whole, the selection of subjects seems to be a judicious one. There are three chapters dealing with architecture, under the headings, "Ecclesiastical," "Domestic," and "Military," and one with art generally. The kindred subjects of heraldry and costume have a section apiece, the remainder of the book being taken up with monasticism, town and country life, commerce, shipping, and education. We do not understand on what principle the Editor has excluded music and poetry, or the development of civic and religious ceremonial, a typical and peculiar growth of the period to be illustrated.

It is unfortunate that the opening Section, viz., that on Ecclesiastical Architecture, by the Rev. A. Galton, should be also the worst, both in matter and form. It is amateurish, jejune, and verbose. The mere reading up of a subject does not confer philosophic grasp; but surely an acquaintance with Mr. Prior's "Gothic Art" or Mr. G. G. Scott's "Essay" (neither of which is given in the list of books recommended) might have corrected the shallow view which conceives of Gothic art as a matter of cusps and ball-flowers, and leaves its owner fumbling feebly, overwhelmed with trivial details.

The quality of the information offered to "extensionists" may be tested by the following samples:—

"Roman architecture, also made wanton by the Orientals, produced that Byzantine style of which St. Mark's Church at Venice is the most notorious example in Western Europe" (p. 2).

"Norman roofs are semicircular, either of stem vaulting or of wood, or of flat wood" (p. 8).

"In the Western Counties the carving of the bench-ends was on the solid, while in East Anglia and the Midlands the construction was of a higher class, in which the rails, panels, &c., were inserted, the buttresses alone being on the solid" (p. 17).

"This graceful [fan] vaulting helps to relieve the flatness of Perpendicular roofs and arches" (p. 14).

Mis-statements of fact occur, as:—

"Sometimes the rood hung from a beam which was placed across the chancel arch" (p. 7).

"The walls [of English churches] were frescoed" (p. 20).

"The Easter sepulchres . . . were all destroyed" (p. 22).

Mr. Gotch's capacity for dealing with "Domestic Architecture" in an interesting manner is well known; but he has given only one side of his subject, leaving the impression that the castle and manor-house represent the whole of the domestic architecture of the period; for not a word does he say of the town house*, surely not the least important part of mediæval building, though hitherto somewhat neglected by English archæologists. It might not be easy to find a consecutive series of street-houses dating from the Early Mediæval period, but there is abundant documentary evidence of the highest interest and value, beginning with the London Assizes of 1189 and 1212—the precursors of the London Building Acts—to which no allusion is made either by Mr. Gotch or by Miss Toulmin Smith in the chapter on "Town Life."

The only defect of Mr. Hartshorne's section on "Costume" is that it contains so much information given in so condensed a manner, and requiring such constant reference to the plates, as to make it useful for reference rather than reading.

It may be noted that the few examples of questionable taste in mediæval art occur in the fashions of female dress, then, as now, *lacis moult estreitement*, and extravagantly *outré* in its headgear. Certainly the horned and steepled head-dresses of the fifteenth century were less trivial than are the "confections" of to-day or yesterday, but they illustrate the same tendency which makes a woman willing to appear grotesque rather than inconspicuous. At the same time, the simpler forms of head covering were quaint and pretty, *e.g.*, the charming butterfly cap with its white wings, resembling that now worn by the sisters of St. Vincent de Paul.

The section on "Heraldry," by the Editor, is a masterly summary of a fascinating subject, and one which, for clearness and grasp, we have not seen equalled. Of exceptional interest is his account of the origin of the "ordinaries," those simple geometrical charges formed, for the most part, by divisions of the shield, the prevalence of which in early armory cannot (except in the case of the cross) be accounted for by symbolic meaning, or specially decorative quality. It is clearly shown that they were not mere arbitrary arrangements of abstract lines, but had their origin in the structural requirements of the large pre-armorial shield. This was formed of oaken boards, sometimes leather covered, and strengthened by iron clamps, studs, rims, and bosses. It is the old story of "decorated construction." The painting of the adjacent boards in contrasting colours produced the divisions known as *fess*, *bend*, and *pale*, according as the shield was built up of horizontal, diagonal, or vertical boards; simple charges as *chevronels*, *fretty*, &c., being formed by the metal stiffening strips. Such a charge as a *bordure bezanty* easily explains itself as a metal rim attached with large gilt-headed nails. The narrowness of the charges in early armory is confirmatory of the hypothesis of their origin.

As the adoption of the closed helm gave birth to heraldry by necessitating the employment of conspicuous badges whereby leaders might be recognised in the dust and confusion of battle, so the disuse of the shield in warfare, *circa* 1500, brought about its decay. Before that date changes in the shape of the service shield had been dictated by utilitarian considerations alone, and the charge had to adapt itself to the current form. But as the shield fell out of practical use artists began to play tricks with its contour, which soon became purely arbitrary and capricious, or was even drawn to fit the charges. The wholesome restraint of outline being removed, the draughtsman lost the fine conventionalising power which this had conferred upon him, and sank into feebleness. Consequently, as the scutcheon becomes more and more unreal and conventional, so the animals and other charges grow more and more naturalistic and meaningless: debasement of the bearings advances *pari passu* with debasement of the shield. As in the case of other minor forms of art, utility was the salt which preserved heraldry from corruption: so long as it was in touch with actuality it remained on a high artistic level; once it became purely decorative its degradation was assured.

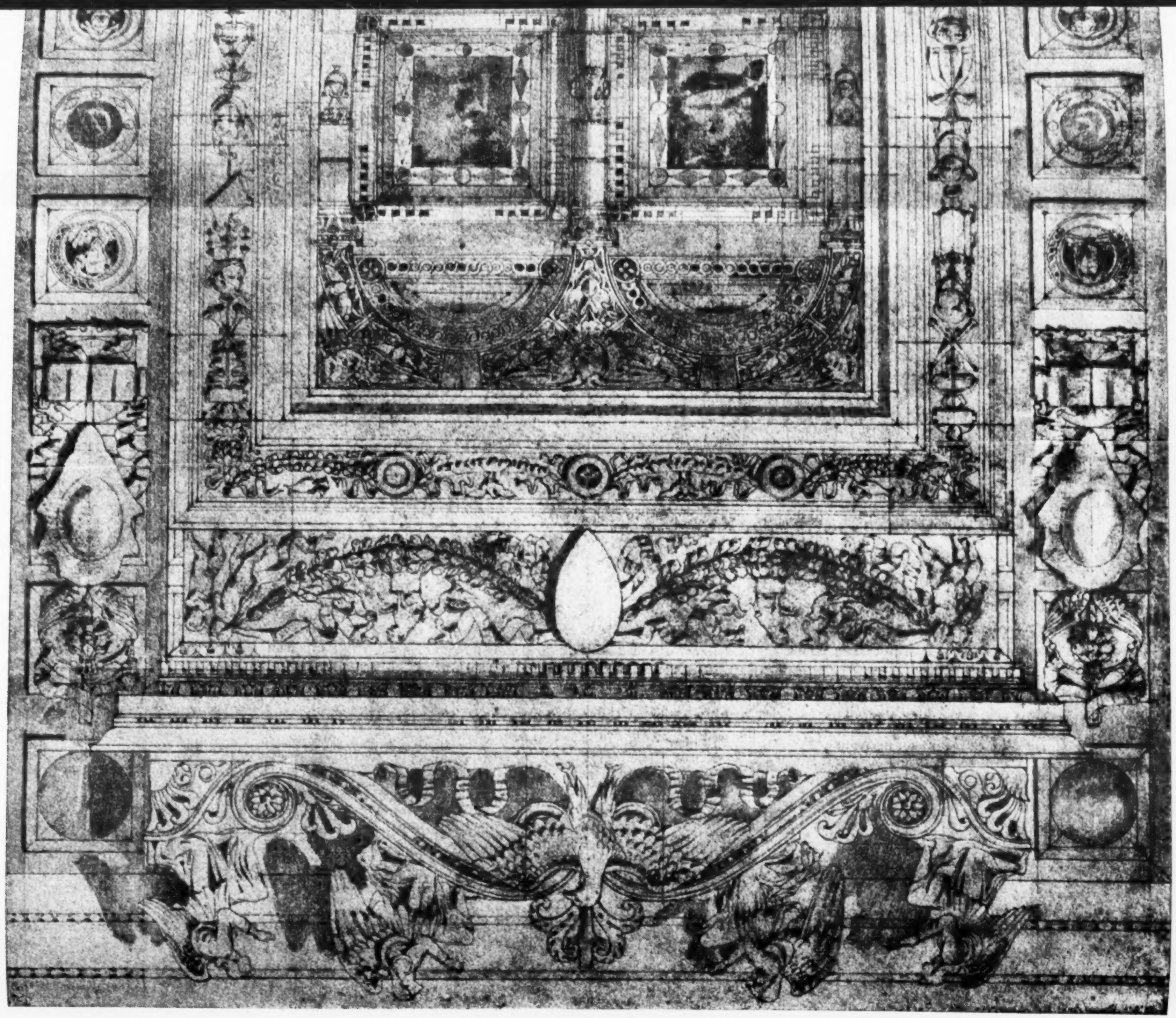
* Rather thinly treated in his "Early Renaissance," c. X.

Abydos. Part I. 1902. By W. M. FLINDERS PETRIE. (Twenty-second Memoir of the Egyptian Exploration Fund). London; Kegan Paul & Co.; 1902.

THIS is the first portion of the publications of the Egypt Exploration Fund which deals with the discoveries at Abydos. According to the Introduction, it covers all that has yet been found in the Temenos at Osiris and the cemetery, but a large part of the work is kept back for publication next year. This latter portion of the work, not included, will deal with the results of the excavations at some large tombs about a mile south of Abydos.

Of the illustrations, a large portion represent flint implements of various kinds, inscriptions, &c., and a large portion also represent stone

THE BUILDER, AUGUST 9, 1902.



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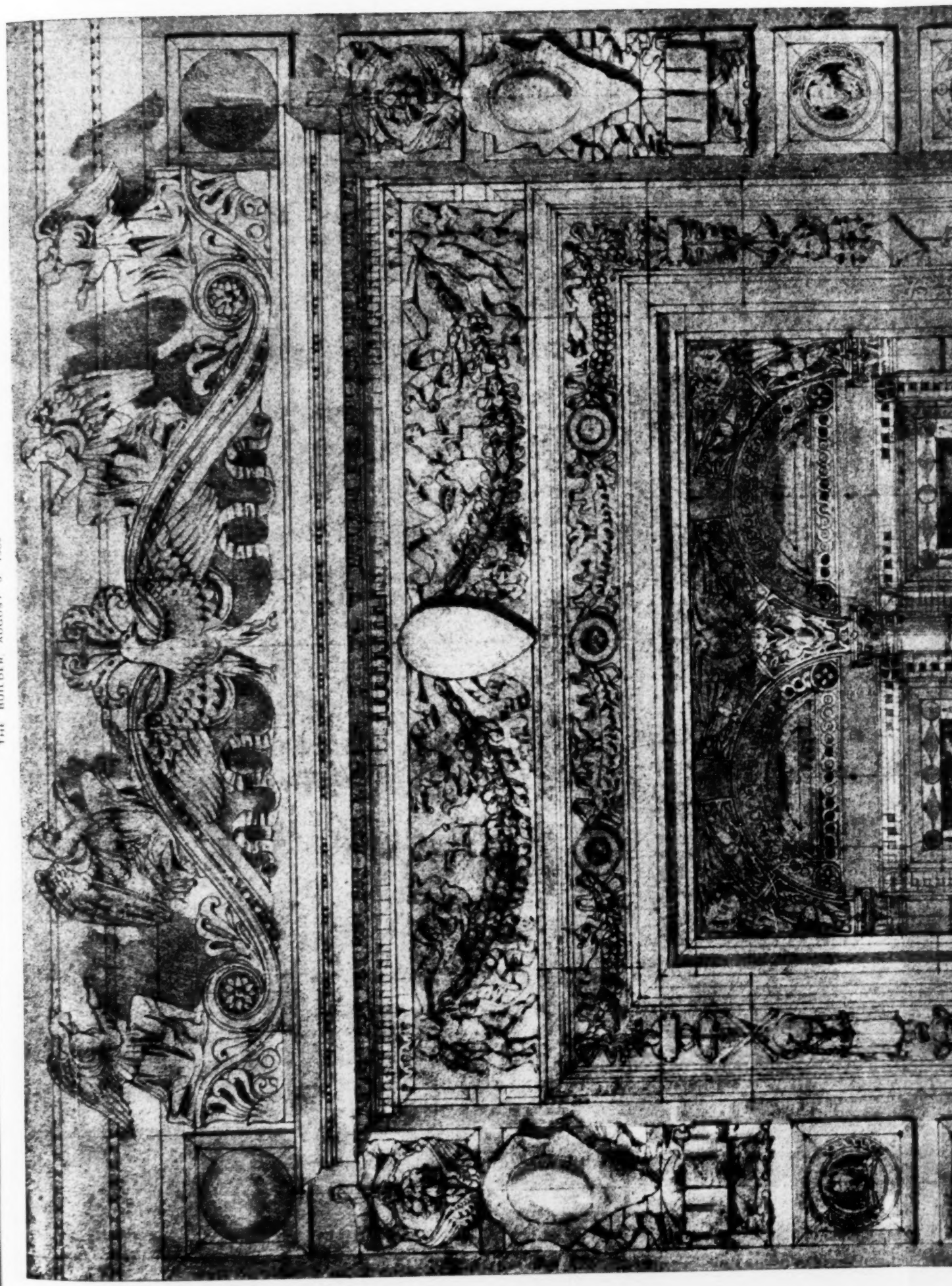
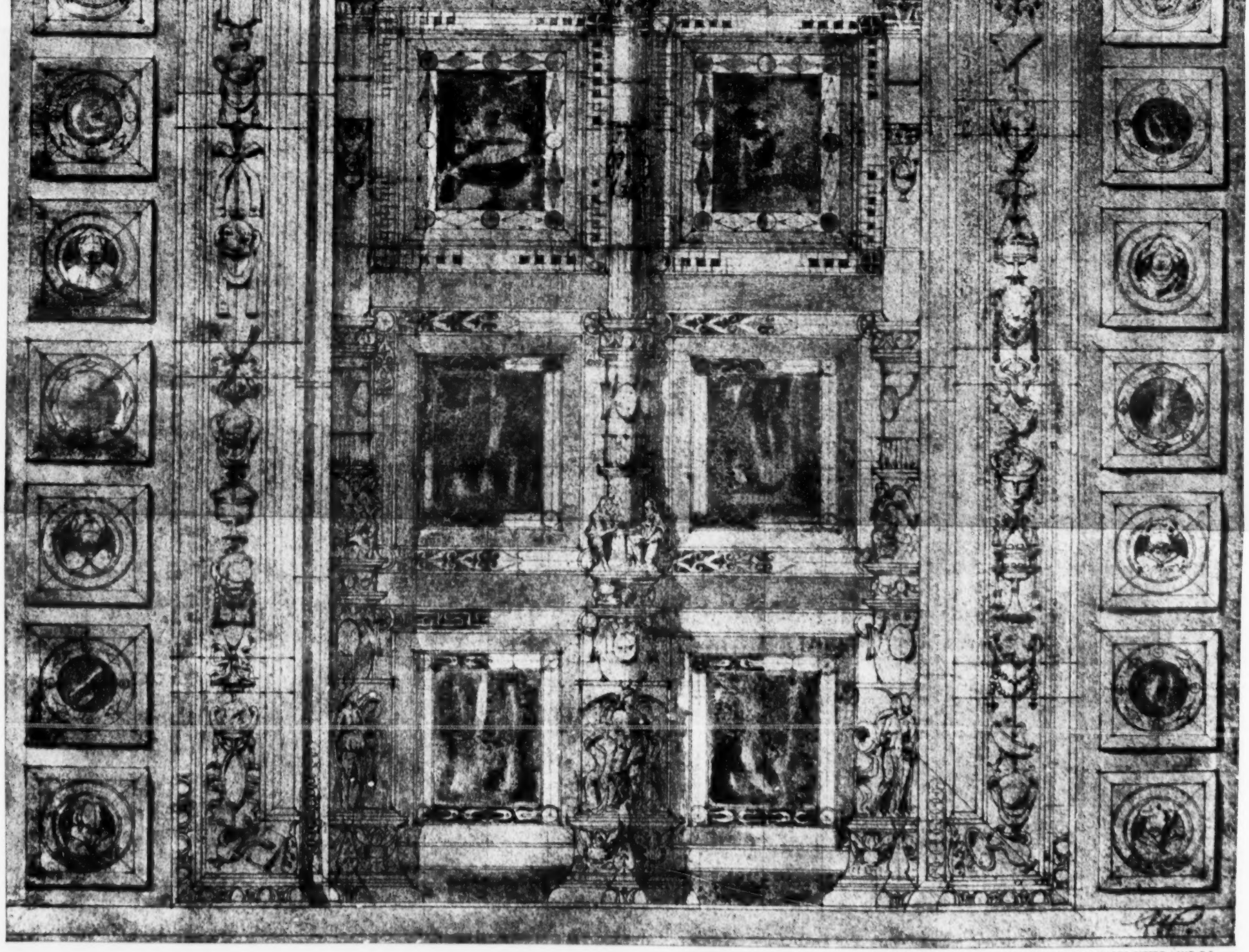




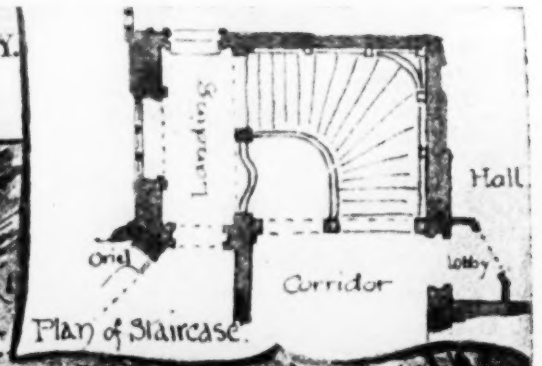
INK-PHOTO, SPRAGUE & CO. LTD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

WINDOW FROM THE CERTOSA, PAVIA.—From a Drawing by Mr. G. A. Paterson.

THE GRAND STAIRCASE, HARDWICKE GRANGE, NEAR SHREWSBURY.

FOR F. BIBBY ESQ^RE.

E. RIDSDALE TATE, ARCH^T
WANDSWORTH,
LONDON S.W.



Plan of Staircase.

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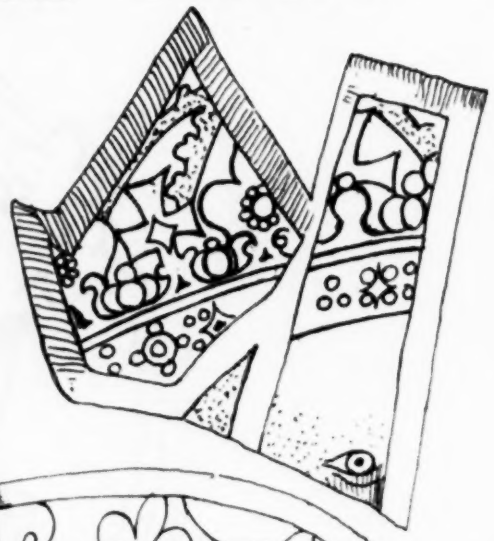
Great Malvern.



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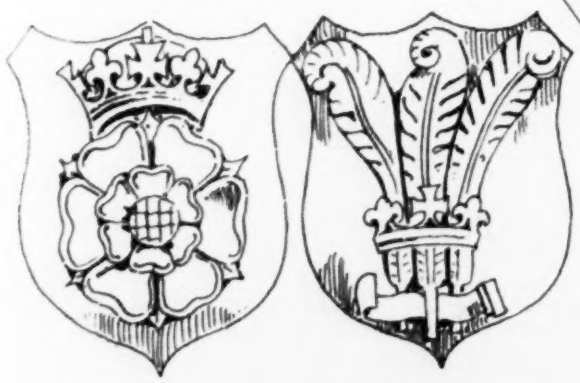

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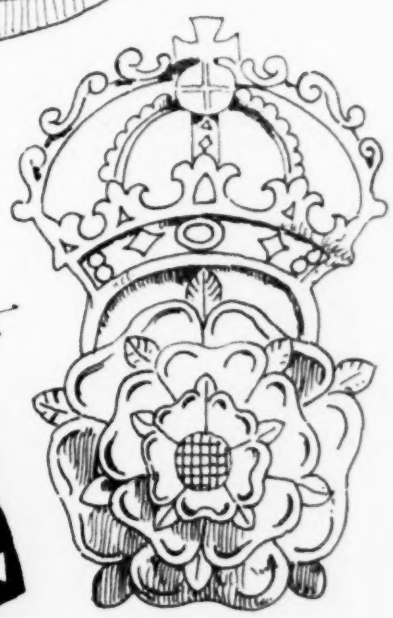

Pitney.

CROWNS.

Some Mediæval examples in Glass, Stone & Wood.

Reginald Blomfield del. 1902

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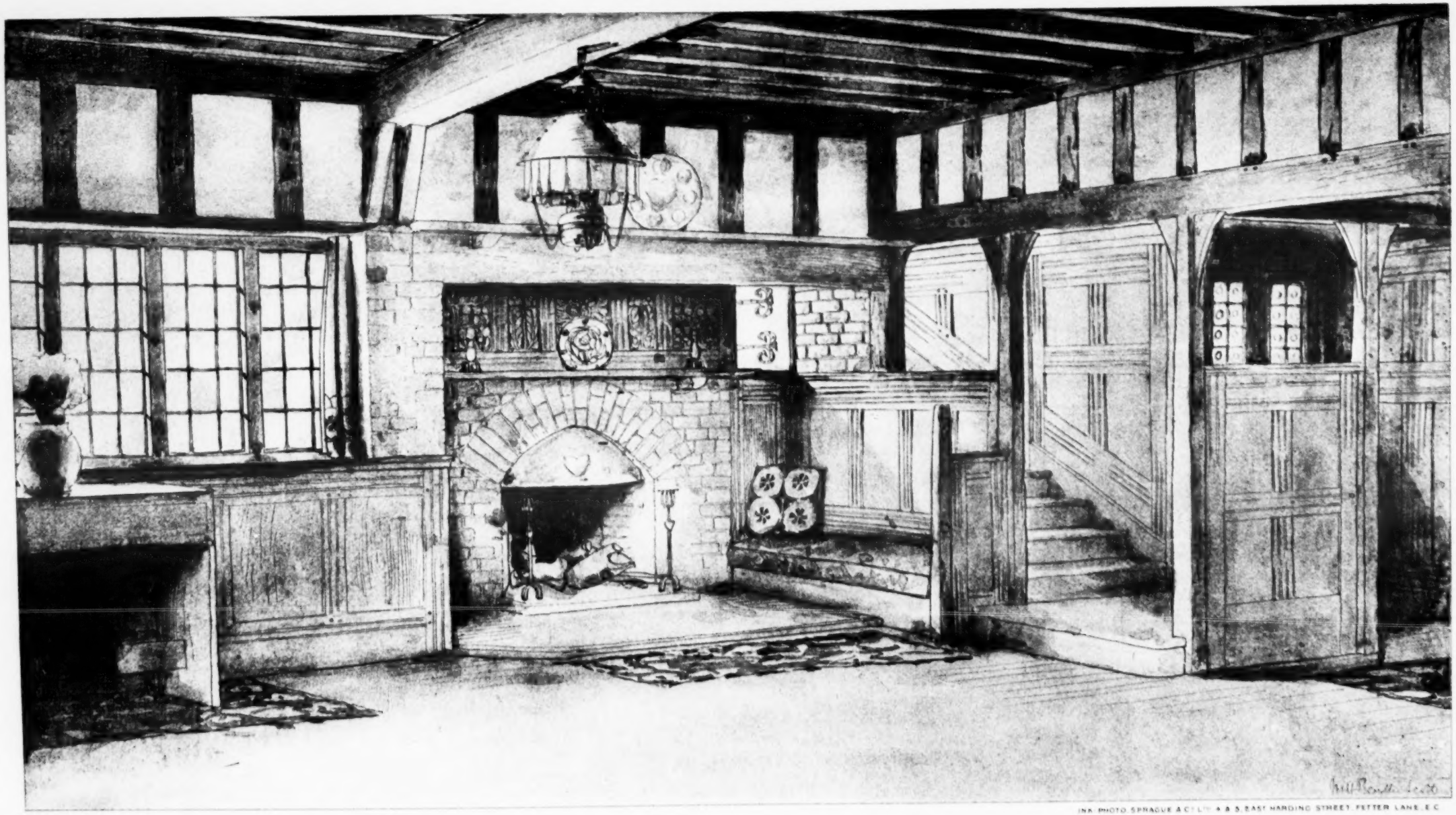
INA PHOTO SPRAGUE & CO LTD 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

HOUSE AT WINDERMERE: ENTRANCE FRONT.—Mr. M. H. Baillie Scott, Architect.



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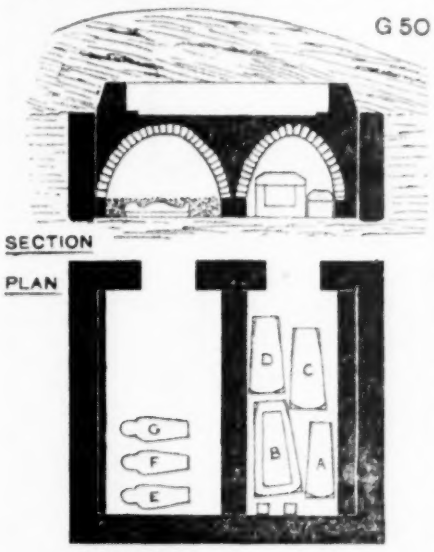
HOUSE AT COBHAM: THE HALL.—Mr. M. H. Baillie Scott, Architect.

vases. These are mostly shown in brown silhouette elevation drawings, with the interior section and the few very simple forms of ornament indicated in white lines. This method of representation brings out exceedingly well the outlines of the vases, which are exceedingly varied and characteristic. There are also photographs and drawings of sculptures, inscriptions, pictorial work, amulets, and many other objects.

There is only one plate which can be called architectural, that giving sections and plans of the tombs at Abydos. The sections are of interest in regard to two points. One is, that their arched roofs are, roughly, of elliptical section, showing evidently the natural effort, in a very early structure, to avoid the weakness of the nearly flat top of the semi-circular arch. The other point is the curious termination of the tomb numbered "G 50," of which we give



a reproduction in the annexed diagram, and which shows above the roof what appears like the commencement of a pyramidal top, which is not continued. Professor Petrie is of opinion that it never was continued, as there was no sign on the ground of any débris of the remaining portion. This section shows also the elliptical form of the arch.

Architectural Drawing. By R. PHENÉ SPIERS, F.S.A. New and revised edition. London: Cassell & Co. 1902.

WE noticed at length, some years ago, the first edition of this excellent work, a most useful one for young architects, as it includes a synopsis of all that they really require to know in regard to architectural drawing.

The text has been revised, and additions and alterations made in order to bring it up to date. There have been some changes in the plates; four of the tinted examples have been omitted, and seven new plates substituted. One of these, which forms the frontispiece, is a beautiful tinted geometrical drawing of an elevation with super-imposed orders, by the author; we presume one of the studies of his Ecole des Beaux-Arts days. The inclusion of this drawing has suggested to the author the advisability of giving some little account of the line of study followed at the Ecole des Beaux-Arts. Hence we learn that so much importance is attached to an intimate acquaintance with the forms and proportions of the Classic Orders, that once in the year a subject is given called the "*projet de l'Ordre*," in which the special Order to be used is defined (though it may be based, at pleasure, on either the Greek, Roman or Italian form of the Order), and two months are given for the study of the subject and the preparation of the drawings. Whether such a system has a good or bad effect may be open to question. It will be thought by some that it is only deadening the fancy and imagination of the student, and leading him to the adoption of conventional precedents in architecture. But this would, we should say, depend a good deal on the student himself. If he has genius, he will recognise this as a method in the study of proportion in design, and as a means to an end only; if he has no genius or originality, he may at all events learn from this study to treat classic materials with refinement and correctness, which is better than using them clumsily and incorrectly; and he will be saved, perhaps, from the pitfall of eccentricity. On the whole, the balance is in favour of this severe scholastic training, only it should be diligently preached to the pupil that this is only a means of acquiring a trained eye in proportion and detail, and not intended to encourage him to think that architecture means the reproduction of the Orders.

Among the new drawings is an example of the black-line style of Mr. Fulton, a style which he introduced since the publication of the first edition of the book, and which has already had the compliment of a good deal of imitation. The book would certainly not have been complete for the present date without an example of it.

The first edition having, we gather, been exhausted, there can be no doubt that there is an opening for a new edition, for no student who wishes to study the best methods of architectural drawing could afford to overlook it. Drawing is not architecture, but it is an important agent in the study of architecture; and the method of delineation is an object of interest for its own sake, being a form of art in itself, even if the matter does not go further than the production of the drawing; and though the author's advice, that "the student when drawing should always have some special object in view beyond making a drawing," is excellent as a general rule, for one wants to turn his sketching studies to practical account, there is nevertheless time and occasion in life for now and then making an effective drawing of a picturesque piece of architecture purely for the pleasure of the work as a form of art.

Decorative Brushwork and Elementary Design. By HENRY CADNESS. 8vo. London: Batsford. 1902.

ADMIRABLE indeed is Mr. Cadness's book. There are, of course, many books covering the subject which Mr. Cadness proposes to treat anew, but his work deserves a high place among them.

We are led from the contemplation of materials and their influences on design to a consideration of forms of ornament in general and of methods of expression. The book is a small one, and these latter questions naturally enough take the author a journey through the whole realm of art; but conciseness and brevity, with no loss of clearness, is noticeable in the author's treatment of his subject, and controversial points have been carefully avoided.

In so small a manual it must have been difficult to know where to draw the line—all applied art could not be dealt with, and indirectly "brushwork" may be connected with every form of it. It is only fitting, therefore, that flat ornament, such as that employed for textile fabrics, should find the greater share of notice. In this connexion it seems strange, however, that the treatment of stained-glass design should find no place, whilst some space is apparently wasted in the discussion of mouldings.

It is pleasant to note the author's introduction of some plates showing the design and execution of illuminated manuscripts. The choice of examples seems not, however, very happy. English fifteenth-century work bears no comparison, either for design or execution, with the work of the fourteenth century (Flemish or English), and it is really surprising to observe that of the other examples one is chosen from an Italian manuscript of the sixteenth century (when the art was completely degraded) whilst the other exhibits but a poor specimen of fifteenth-century work in Italy.

The plates of illustrations generally are good. Exception may, perhaps, be taken to the architectural details, which are uninteresting and rather too small.

The index seems workable, and the book is well printed and serviceably bound.

The Fascination of London.—Chelsea. By G. E. MITTON, edited by Sir WALTER BESANT: and *Westminster.* By Sir WALTER BESANT and G. E. MITTON; with a chapter on the Abbey by Mrs. A. MURRAY SMITH. London: Adam & Charles Black. 1902.

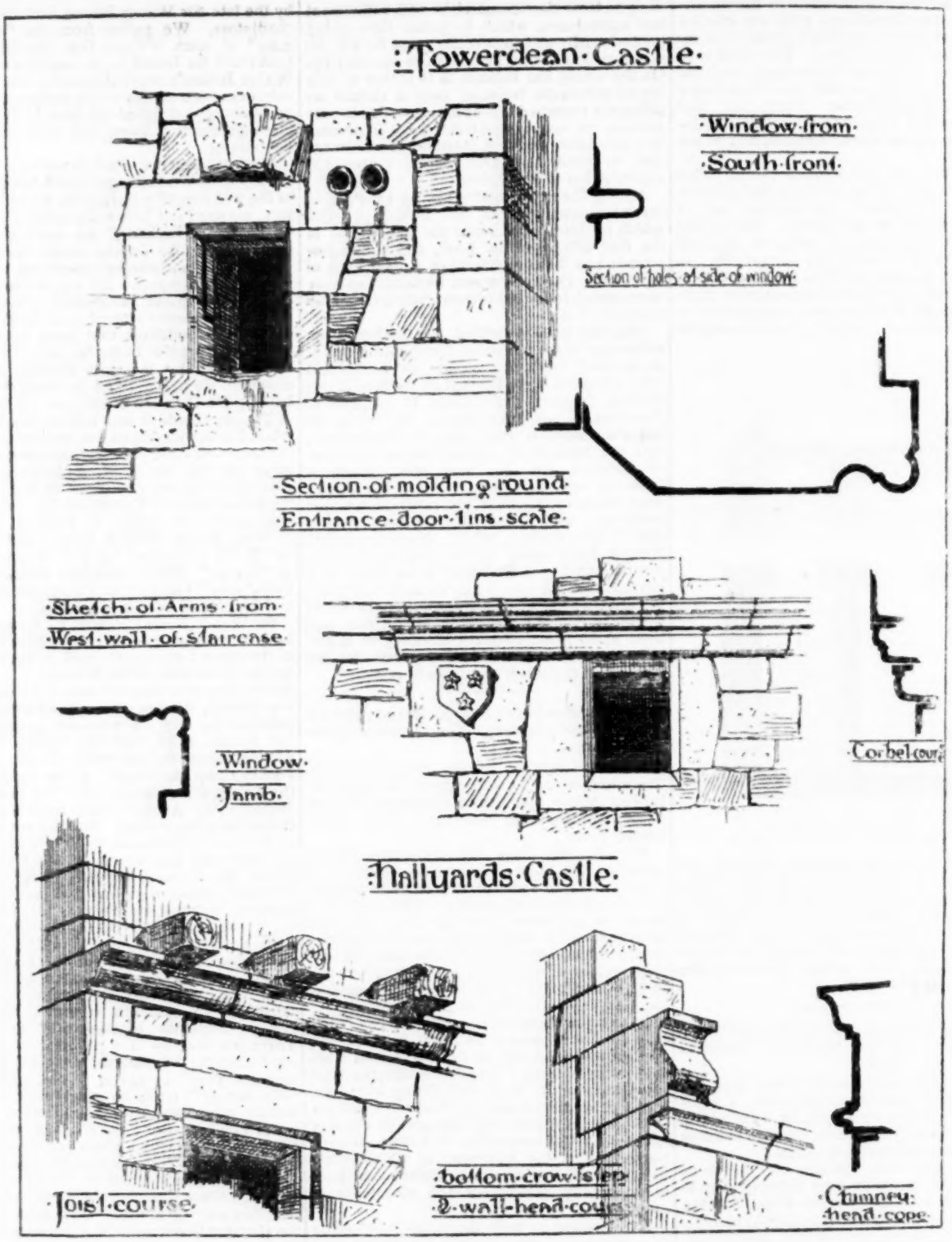
THESE little volumes, to be followed shortly by similar books dealing with Hampstead and the Strand, are the first instalment of a series based, it seems, upon the contents of two books on the parishes of London as compiled by the late Sir Walter Besant and his staff of coadjutors. We gather from the "prefatory note" of each volume that the larger two books will be issued in accomplishment of Sir Walter Besant's original scheme, and that the volumes of his survey of the history of London as a whole, as finished by him to the end of the eighteenth century, will be published in due course.

Having lately described in our own columns the topographical changes which have occurred in the two localities during the nineteenth century, we need not follow the authors' footsteps. Of the two "booklets," we consider the one upon Chelsea to be the better work. Mr Mitton does not attempt to crowd too much into a small compass. He has evidently taken considerable pains to identify places which have been greatly altered, as well as to trace the sites of buildings that have disappeared. In citing Paradise-walk, he says, "In it is a theatre built by the poet Shelley, and now closed." He had in mind, perhaps, the theatre built by Sir Florence Shelley on the west side of Tite-street, which was sold in October, 1896, when the site was taken for Shelley-court. As the names of some architects are given, we may point out that Mr. J. M. Anderson's name is printed as "Mr. Granderson" in the notice of the Scots National Church of St. Columba, in Pont-street; the initials of Sedding, architect of Holy Trinity Church, Sloane-street, appear as "F. R." instead of "J. D;" those of Scott as "G. A." Other misprints include "Rysbach," and "Thorne" for Thoms, the antiquary and founder of *Notes and Queries*.

Sir Walter Besant returns to his somewhat imaginative picture of Westminster—"a place of throng and moil as far back as the centuries before the coming of the Romans. . . . During the two hundred years of war and conquest by the Saxons, Westminster, quite forgotten and deserted, lay with its brambles growing over the Roman ruins, and the weather and ivy pulling down the old walls of villa and stationary camp piecemeal." In her chapter upon the Abbey, the authoress of "The Roll Call of Westminster Abbey" does herself and her theme but scant justice. To the very brief list of distinguished *alumni* of Westminster School we may add the names of Sir Christopher Wren, Sir Edward Poynter, Bart., Professor Cockerell (who designed the act-drop and scenery, painted by Fenton, for the play), G. J. Vulliamy, and Gwilt—the boys call a plate or trencher a "gwilt." The school is more ancient than the authors lead one to believe. At the commemoration on All Souls' Day, 1899, was displayed a collection of thirteenth to sixteenth centuries MSS., one being "Expensæ Eleemosynii" of 1284-5. There are records of a payment of salary to the "Magister Scholarium," *temp.* Edward III., and a "play" in 1413-4. The account of "Up School" omits to mention it was the monks' dormitory, and that the recess at its north end was the "shell" from which the "form" therein took a name that other schools have adopted. Three of the exhibitions are to Trinity, Cambridge, not to Trinity College, Oxford. Since it is claimed for the two books that they are "up to date," we may observe that the (former) Ordnance and Transport Office in Canon-row, latterly occupied by the Civil Service Commissioners—a building distinguished by its Ionic portico upon a flight of steps, and a spacious circular hall, built in 1816 (and not "in 1784") from designs by William Pilkington (not, as is commonly stated, by William Atkinson)—was pulled down two years ago to make way for an addition to the adjacent headquarters of the Metropolitan Police force; and that the Charity Commissioners, at the request of the Apothecaries' Company, framed a scheme in December, 1898, for transferring the Physic Garden at Chelsea to a new managing body. Moreover, "Holbein's Gate," demolished in 1750, appears in the view entitled "Whitehall in 1755"; Archer's original designs for St. John's Church, Westminster, did include four angle towers; and Vauxhall Bridge-road forms no part of the site of Millbank Penitentiary. Each book has an index, and a modern map with neither scale nor cardinal points.

Garden Cities of To-morrow. Being the second edition of "To-morrow: A Peaceful Path to Real Reform." By EBENEZER HOWARD. London: Swan, Sonnenschein & Co. 1902.

THIS is a very Utopian publication, which is based on the theory that an attempt should be made to unite, for the purposes of habitation,



Reproduced from "Scottish Architectural Details," by Mr. J. W. Small.

town and country. It is so fanciful, and the projects suggested are so impossible of realisation, that it does not appear desirable to comment upon it at length. We may, however, draw attention to one point in regard to what the author fancifully calls "Garden City," which has some practical importance; that is, that land immediately around the city should not be built over, but that there should be a space of open country between the different blocks of buildings. A practical example of this may be actually seen in the city of Adelaide, where a large open space of park lands and gardens intervenes between it and North Adelaide. There is no doubt that such intervening spaces ought to be purchased by municipal bodies in this country. It is a noticeable feature in the increase of modern London that the squares and so-called gardens are much smaller than they were in former times. Take any of the squares about South Kensington and compare them with Russell-square, for example, and the difference is seen at once. Thus there is ultimately less fresh air in the newer part of London than in the older.

Scottish Architectural Details. By John W. Small, F.S.A.Scot. Stirling; Eneas Mackay: London; Gibbings & Co. 1901.

This is the second edition of a book which was formerly published, with a limited number of copies, under the title "Leaves from My Sketch Books." The present title is a better because a more definite one, as the sketches are all of Scottish work, and therefore to English architects who are not so familiar with the smaller peculiarities of Scottish architecture they may have value, as illustrating a special subject, which would not attach to such a more mixed collection as might be implied by the former title. And they may be specially useful to architects who are carrying out work in Scotland, as introducing them to various characteristic details which only a considerable acquaintance with Scotland and its ancient architecture could have enabled a sketcher to collect.

These are not show drawings of picturesque buildings, but scraps of detail of special interest from their character or their rarity; and very curious many of them are; in some cases not only interesting as historic facts, but also suggestive for new ideas in the detail of buildings. They consist of such things as two doorways from the Castle Hill, Edinburgh, with carved heads; an old candlestick of peculiar design; characteristic forms of windows; fireplaces; metal and woodwork, &c.

The plate devoted to bits of Towerdean and Hallyards Castles, of which we give a reduced reproduction, is a typical example of the kind of things which the drawings illustrate. Towerdean Castle, the name of which is not familiar to us, is in the village of Gorebridge, some twelve miles south of Edinburgh, and is described as being in a ruinous condition; but, as the author says, various points of interest exist in the remains. From Hallyards we have a moulded stone projecting course for taking the ends of joists, which the author notes as unusual; the decorative treatment of the lowest corbiestep in one of the gables; from Towerdean the curious incident of the two narrow circular holes cut in the wall of the castle near one of the windows (see upper part of illustration), for which the author says he can offer

no explanation. We should be disposed to think that they were for affixing some kind of signal; but if any of our readers have a better suggestion to offer, we shall be glad to have it.

A Guide to Epsom. "Homeland Handbooks" Series. By GORDON HOME. London: The Homeland Association; Epsom: L. W. Andrews & Son. 1902. 9d.

THIS is one of the series of which we have noticed several before, which deal with the history, character, and associations of English localities. In the case of Epsom the main interest lies rather in social than in architectural history; but the small volume, in addition to the accounts of celebrated persons who visited Epsom, and of the often very dissipated doings at "Epsom Wells," contains sketches and descriptions of the old and existing buildings of the town, and of some of the country houses round about. Those who are visiting Epsom as travellers or tourists would find their interest much increased by the possession of this little book; but the majority of visitors to Epsom in the present day probably consider the racecourse the only piece of scenery worth attention.

The Earth in Relation to the Preservation and Destruction of Contagia, together with other Papers on Sanitation. By GEORGE VIVIAN POORE, M.D., F.R.C.P., &c. London: Longmans, Green, & Co. 1902.

DR. POORE is well known as an ardent advocate of the utilisation of sewage, and his new book is to a large extent occupied by a restatement of his views in the light of recent knowledge. The first half of the book contains the Milroy Lectures delivered by Dr. Poore at the Royal College of Physicians in 1899, and is divided into fourteen chapters, some of which appear to have very little bearing on the subject stated in the title. The author discusses the principal pathogenic bacteria in their relation to the soil, and declares that "it is incontestable that soil-diseases (so-called) are most rife precisely in those spots where the ground is not cultivated"—that is to say, in the crowded centres of population. He argues from this and other facts that the danger of applying excreta to cultivated land is not so great as is commonly supposed. The experience of the Manchester Corporation at Carrington Moss furnishes matter for one of the chapters, and leads up to the author's conclusions, which may be briefly summarised as follows:—Dung is absolutely necessary for the maintenance of the fertility of the soil; there is "no proof of any danger arising from the use of dung for agricultural purposes"; for financial reasons it is highly desirable that dung should be so used; modern methods of sewerage and sewage-disposal are, therefore, wrong in principle, and destroy "the only chance of getting a living from agriculture." Dr. Poore has very little to say about ordinary sewage-farms, although these are serious attempts to utilise the manurial contents of the sewage, but probably the failure which has so often followed these attempts has no discouragement for him, as he is strongly opposed to the water-carriage system of drainage. Perhaps the most interesting chapter to the architect is that containing an account of Dr. Poore's cottage and garden near Andover. The fæces are collected in an earth-closet, and the waste-water from the scullery sink (which appears to be the only "sanitary fitting" in the house) is discharged through a basket strainer containing straw into a small iron filter filled with broken clinker, and passes thence through a perforated iron channel into a filtration gutter 24 ft. long, 18 in. wide, and 18 in. deep. The rainwater is ingeniously filtered and stored in an underground tank, from which it is pumped for domestic use. The garden has an area of 1¼ acres, and the ordure and house refuse from about 100 persons are applied to it daily. The results appear to be very satisfactory financially, and Dr. Poore is convinced that the garden might take with advantage "at least double the quantity" of ordure, "if not more." This experiment is worth repeating in other country districts, but it is obviously less suitable for large towns, where the daily collection and removal of such "night-soil" would almost certainly be attended with nuisance. Earth-closets, again, are seldom kept in a proper manner; the writer has just spent some weeks in a small seaside village where they are in general use. The earth is conspicuous by its absence, and the stench is in some cases most objectionable. The book is well worth reading, and is a valuable and interesting contribution to the discussion of some much vexed questions.

The Country Gentlemen's Estate Book, 1902. Edited and compiled by WILLIAM BROOMHALL. London: The Country Gentlemen's Association, Ltd. 1902.

THIS is the official year-book of the Country Gentlemen's Association, and contains a varied assortment of articles on matters of interest to country gentlemen, estate agents, architects, and others engaged in the management of rural property. Among the contributors architects, surveyors, engineers, estate agents, sportsmen, barristers, accountants, veterinary surgeons, pisciculturists, agriculturists, and arboriculturists are represented, and horticulturists also will find matter of interest in some of the 600 pages which the book contains. To architects the most interesting contributions are those by Mr. Charles Carter on "Entrance Lodges, Gamekeepers' and Gardeners' Houses"; by Mr. John M. Hotchkiss on "Labourers' Cottages"; Mr. by Edmund R. Foley on "The Home Farm Buildings at Deepdene, Dorking"; and by Mr. E. Sidney Wilson on "The Building of Stables and Farmsteads." All these articles are illustrated, and, while exception may be taken to some of the details of plan and elevation, the designs on the whole are of good character. A short article by Mr. Wm. Stevenson on "Building Timber" may also be mentioned. We have noticed very few errors, and, although the book contains a long catalogue and price list of the goods supplied by the Trading Department of the Association, we have pleasure in recommending it to those who have no purchases to make, but who are in any way concerned in the management or enjoyment of country estates.

Pipes and Tubes: Their Construction and Jointing, together with all necessary Rules, Formulæ, and Tables. By PHILIP R. BJÖRLING, Author of "Mechanical Engineer's Pocket-book," &c. London: Whittaker & Co. 1902.

WE are not acquainted with any other book dealing solely with this subject, and Mr. Björling's work may therefore be accepted as a welcome contribution to technical literature. The author is a hydraulic engineer, and it is only natural that he should deal more fully and more ably with this part of his subject than with some others. The chapters on cast-iron, wrought-iron, and steel pipes and joints for water-mains contain a good deal of valuable information in a small compass, and many kinds of ball-and-socket joints, swivel-pipe joints, and expansion joints are also described and illustrated. The chapter on drain-pipe joints makes mention of nearly all the most important patents, but it is a mistake to recommend clay as a jointing material, and the gradients stated on page 9 as the "usual inclinations" are utterly inadequate. The rules for the thickness of lead service pipes (page 97) grossly overestimate the strength, and have clearly not been adopted by the author in calculating the table on page 221; according to the rules, a ¾-in. pipe for a head of 200 ft. requires to be ½ in. thick, which gives a weight of little more than 1½ lbs. per foot, but according to the table the weight of such a pipe ought to be 5 lbs. per foot. There is a misprint in the last of the rules just referred to, R being printed instead of D. Among the omissions may be mentioned galvanised-iron pipes and tin-lined iron pipes for domestic services, waste-pipes, and soil-pipes; gas-pipes are merely mentioned incidentally in the text and in one table, and are not included in the index. These are matters which ought to find a place in the next edition of the work.

Dowding's Wages Tables Calculated for Wages Payable by the Hour. Compiled by EDWARD DOWDING. London; King, Sell & Olding; 1902.

THIS is an admirably arranged little book for saving the trouble of computing sums in wages paid by the hour. It gives in tabular form the amounts for hours and quarters of hours from one to seventy-two, for wages from 3d. per hour to 12d. per hour, ascending by farthings. The whole numbers, 3d., 4d., 5d., &c., are printed in red on cut margins, as in a ledger, so that they can be turned to at once. The book ought to be very useful to those who frequently have to pay fractional wages or fractional times.

Correspondence.

OSCILLATION IN SPINNING MILLS.

SIR,—Can you or any reader give the name of a book, paper, or Society Transactions treating upon the cause and cure of oscillation in the buildings of tall spinning mills.

The one under consideration did not vibrate to any extent until the velocity of the looms was increased some 50 per cent., when this movement has become serious.

The mill walls are substantially built, and it is some five stories in height. W.

The Student's Column.

THE CHEMISTRY OF BUILDING MATERIALS.

6.—ANALYSES OF SOME GOOD AND BAD ANCIENT AND MODERN MORTARS.—SELENITIC MORTAR.

IN the years 1892 and 1893, Mr. John Hughes published in the *Builder* analyses of a number of mortars taken from some of the castles and abbeys erected in the British Isles between 1000 and 1270 A.D. The most important of the deductions drawn from his analyses are:—

1. The proportions of lime vary largely, and the mortars containing the largest proportions are not invariably those in the best condition at the present time. Seldom, however, does the proportion of sand to lime in these old mortars exceed 2 to 1 *by weight* (say equal parts *by measure* of lime and sand).

2. The mortars in the best condition are invariably those which contain the largest proportions of silica soluble in 10 per cent. caustic soda solution.

The following selections from his analyses illustrate these points:—

	Rochester Castle.	Corfe Castle.	Caerphilly Castle.
	Quality of Mortar.		
	Bad.	Good.	Good.
	Probable date of erection about A.D.		
	1088.	1000.	1290.
Water lost at 212 deg. Fahr.	·30	2·42	2·80
Combined water and volatile matter	1·48	4·02	7·73
Lime	28·07	31·05	13·40
Magnesia	·18	·28	1·87
Potash	·16	·20	·22
Soda	·24	·15	·20
Oxide of iron	·40	·95	3·61
Alumina	·30	·15	1·34
Sulphuric acid	·29	·20	·34
Carbonic acid	20·60	22·80	9·53
Chlorine	·10	·05	·01
Gelatinous silica, soluble in soda	1·60	7·50	9·85
Insoluble matters (sand)	45·62	29·51	40·12
	100·00	100·00	100·00

It will be observed that the proportion of lime in the mortar of Rochester Castle is slightly less than in that of Corfe Castle, but much larger than the proportion present in that of Caerphilly Castle. The proportion of active silica, which Mr. Hughes calls "gelatinous" silica, is much smaller in the Rochester Castle mortar than in either of the other mortars. The small proportion of combined water in the Rochester Castle mortar also shows that very little hydrated silicate of lime is present.

The physical qualities of the three mortars are referred to by Mr. Hughes in the following terms:—

Rochester Castle.—Of Rochester Castle practically only the keep remains, and that stands by virtue of its massiveness rather than by any excellence of its mortar.

Corfe Castle.—Of Corfe Castle the late George Godwin, in his prize essay, "On the Nature and Properties of Concrete," tells us that Smeaton visited it, and found that its solidity did not consist in having been built with large hewn stones throughout, for the filling-in of the walls consisted of rough rubble

and fragments from the quarries, the interstices being entirely filled up with mortar poured in a fluid state, and the whole mass had in time become thoroughly cemented together. As a consequence, when the castle was destroyed in 1646, the walls when blown up did not fall into small pieces, but were split up into huge masses, which rolled bodily down into the moat below, where they remain still intact, the native builders finding it easier to obtain fresh stones from the nearest quarry rather than from these masses of cemented masonry.

Caerphilly Castle.—The sample analysed was taken from the leaning tower of Caerphilly Castle, Monmouthshire. The splendid character of the mortar is amply proved by the fact that the tower withstood the attempted destruction in the time of Charles II., and still remains in its leaning position.

Hughes's Test for Active Silica.—The estimation of the proportion of active silica present in mortar is made as follows :—

Two grammes of the finely ground mortar are first evaporated with hydrochloric acid to complete dryness on a water bath ; the insoluble residue is then treated with dilute hydrochloric acid, and the insoluble matter filtered off, ignited, and weighed. This insoluble matter is then boiled for half-an-hour with 100 cc. of a 10 per cent. solution of caustic soda, which dissolves all the gelatinous or amorphous silica, leaving the crystalline and coarser sand unaffected. The sandy matter insoluble in the soda solution is filtered off, ignited, and weighed. The difference in the weight of the insoluble matter before and after treatment with the soda solution represents the quantity of active silica present.

In Portland cement the silica should be wholly present as calcium silicate, which is readily soluble in hydrochloric acid. In freshly made lime mortar the active silica is usually partly present as calcuim silicate soluble in hydrochloric acid and partly present in a form insoluble in hydrochloric acid, but soluble in 10 per cent. soda solution. The active silica in Portland cement may therefore be estimated either by Hughes's test or by ascertaining the quantity soluble in hydrochloric acid. The active silica in lime mortar can only be satisfactorily determined by estimating the silica soluble in soda (Hughes's test) because colloid silica insoluble in acid may slowly react with lime to form calcium silicate.

In applying the soda test it must be remembered that silicate of alumina—the main constituent of clay—is more or less soluble in boiling caustic soda. The soda filtrate containing the dissolved silica should be examined for alumina, before ascribing the loss in weight wholly to dissolved silica.

Attention has repeatedly been drawn by Mr. Hughes in the pages of the *Builder* and elsewhere to the extreme importance of the presence of a considerable quantity of silica soluble in dilute soda in mortars of good quality, and analyses made by the writer support his statement.

Samples of mortar taken from a portion of the old London wall built by the Romans *circa* 360 A.D. had the following average composition. The mortar was obtained from the wall uncovered at the Old Bailey in 1900, and contained water-worn pebbles. For analysis the whole of each sample, including the pebbles, was crushed to powder :—

	London Wall. Date of erection, *circa* 360 A.D. Per cent.
Water (lost at 212 deg. Fahr.)	1·74
Combined water and organic matter	2·77
Earthy matter (Dibdin and Grimwood test)	4·49
Sand, including pebbles	65.60
Silica, soluble in acid	1·20
Oxide of iron	·66
Alumina	·29
Lime	14·47
Magnesia	·04
Carbon dioxide	8·21
Sulphur trioxide	·17
Other matter and loss	·27
	100.00
Silica soluble in 10 per cent. soda (Hughes's test)	9·90

It will be observed that the proportion of silica soluble in soda is high, while that soluble in hydrochloric acid is low. It is probable that the proportion of soda-soluble silica was increased by the presence of the crushed pebbles, but the mortar was in excellent condition and of great strength, a fact which was due no doubt to the presence of active silica in considerable proportion.

Minimum Proportions of Lime and Silica.—No standards have yet been generally adopted for the *minimum* proportions of lime and active silica to be permitted in mortar. No satisfactory lime or cement mortar contains less than 9 per cent. by weight of calcium oxide, and a cement mortar should not contain less than 2 per cent. of silica soluble in hydrochloric acid. A lime mortar should not contain less than 5 per cent. of silica soluble in 10 per cent. soda solution.

It is probable that the minimum percentages allowed should be higher than the proportions here mentioned, but the whole question of mortar analysis requires careful consideration by an authoritative committee. This committee should fix minimum standards for the essential constituents of mortars, and either agree upon a definition of "earthy matter" or obtain the deletion of the term from the London County Council by-laws.

Some Good and Bad Modern Lime Mortars.—The following examples of good and bad mortar are taken from a number of analyses published by Messrs. Dibdin & Grimwood in their communication to the Society of Public Analysts. The good mortar was made by mixing 1 part of lime with 3 of broken brick by volume.

	Good Lime Mortar.		Bad Lime Mortar.
Moisture, water of hydration, &c.	31·23	...	21·1
Lime	10·89	...	6·0
Lime carbonate	1·97	...	8·4
Lime sulphate	0·61	...	1·7
Iron oxide and alumina	3·55	...	1·4
Silica soluble in acid	1·11	...	0·7
Sand, grit, broken brick, &c.	45·99	...	46·3
Earthy matter	1·37	...	10·4
Loss on ignition	3·28	...	4·0
	100·00		100·0

The large proportions of water show that the analyses were made with freshly prepared mortar. The figures for compounds other than water would, of course, increase in proportion with the loss of water by evaporation. The lime mortar referred to as "good," would not be a good lime mortar according to Mr. Hughes unless a considerable proportion of active silica soluble in soda was present in the matter quoted as "sand, grit, broken brick, &c." The analyses would certainly be of more value if the proportion of silica soluble in soda were also given.

The following analysis, by Mr. Hughes, of a bad modern mortar from Frimley, Hants, may be compared with the analyses of the good mortars from Corfe Castle and Caerphilly Castle, previously mentioned. The Frimley mortar was so bad that the walls for which it was used had to be condemned and rebuilt soon after erection :—

	Very Bad Lime Mortar.
Water (lost at 212 deg. F.)	·40
Combined water and volatile matter	1·36
Lime	8·31
Magnesia	·79
Potash	·21
Soda	·24
Oxide of iron	3·08
Alumina	·67
Sulphuric acid	·36
Carbonic acid	1·26
Chlorine	·12
Gelatinous silica, soluble in soda	3·95
Insoluble matter (sand)	79·25
	100·00

Cement Mortars.—The valuation of cement mortar from chemical analysis is more difficult than that of lime mortar, for the value of the cement is mainly due to the proportion of silica soluble in acid it contains—*i.e.*, to the proportion of calcium silicate present. The estimation of the lime is of itself of little value, for the cement might be adulterated with lime or with chalk. Portland cement contains an average of only 18 per cent. of silica. Assuming the weight of a cubic foot of Portland cement to be 86 lb., and that of an equal value of sand to be 100 lb., the proportion of 1 of cement to 4 of sand by volume is found to be 1 of cement to 4·65 sand by weight. Therefore a mixture of 1 part cement and 4 parts sand by measure contains only 3·18 per cent. soluble silica by weight.

The following analysis of a cement mortar by Dibdin & Grimwood shows by their method of calculation from the soluble silica that the mortar was composed of 1 part of cement to 3·5 of sand by volume. The proportions actually used were supposed to be 1 of cement to 4 of sand.

	Good Cement Mortar.
Moisture, water of hydration, &c.	7·74
Lime	11·97
Lime carbonate	1·04
Lime sulphate	0·93
Iron oxide and alumina	4·00
Soluble silica	3·25
Earthy matter	0·96
Loss on ignition	2·42
Sand and grit	67·65
	100·00

A sample of excellent cement mortar examined by the writer, which was taken from a large bulk of mortar employed for a building recently erected, and said to be made by mixing one part of Portland cement with three parts of Leighton Buzzard sand, gave the following results :—

		Good Cement Mortar.
Water (lost at 212 deg. F.)		3·04
Combined water and organic matter		2·58
Earthy matter (Dibdin & Grimwood test)		5·38
Sand, grit, &c.	do.	67·44
Oxide of iron and alumina	do.	2·15
Silica soluble in acid	do.	1·45
Lime		10·85
Lime carbonate		3·22
Lime sulphate		0·71
Other matter and loss		1·08
		100·00
Silica soluble in 10 per cent. soda (Hughes test)		6·65

The earthy matter was found to consist partly of oxide of iron and partly of silica soluble in soda.

Selenitic Mortar is made by mixing selenitic lime or selenitic cement with sand. Selenitic cement was invented by General Scott, and is made by grinding a mixture of plaster of Paris (sulphate of lime) and hydraulic lime. The proportion of plaster of Paris required usually varies between 4 and 7 per cent. according to the character of the lime employed. If the lime requires more than 7½ per cent. of plaster of Paris to give it the desired qualities, it must be mixed with sufficient clayey lime to reduce the proportion of plaster of Paris required below 7½ per cent.

It is claimed that selenitic lime makes stronger mortar than any other lime, and that it may be mixed with a larger proportion of sand ; and mortar made with selenitic lime sets much more rapidly than ordinary lime mortar.

As sulphate of lime is soluble in water, the addition of plaster of Paris cannot permanently increase the hydraulic property of any lime.

Selenitic lime derives its name from the mineral *selenite*, a crystalline form of hydrated sulphate of lime having the formula ($CaSO_4 2H_2O$).

A mortar made by mixing one part by volume of selenitic lime with four parts of sand was found to contain 1·7 per cent. of sulphate of lime. Mortars made with ordinary lime always contain small proportions of sulphate of lime, and the atmosphere of towns slowly changes carbonate of lime exposed to its influence into sulphate of lime. The presence of 1·7 per cent. of sulphate of lime in a mortar would not therefore necessarily prove that artificially prepared selenitic lime had been used in its manufacture.

COMMONS AND FOOTPATHS PRESERVATION SOCIETY.

A MEETING of the General Committee of the Commons and Footpaths Preservation Society was held on Thursday, July 31, at 25, Victoria-street, Westminster. An important communication addressed by the Right Hon. G. Shaw-Lefevre to the Wiltshire County Council on behalf of the Society with reference to the enclosure of Stonehenge was approved. After pointing out that the recent inquiry held by a committee of three members of the County Council was not a judicial proceeding, Mr. Shaw Lefevre stated :—

"The Society, with a very large experience of cases affecting the rights of the public to roadways and footways, fortified by the advice of their solicitor, and of an eminent King's counsel of the Western Circuit, have arrived at a conviction that the Judges of the Supreme Court would hold that the public have a right to the user of the roads which lead to the monument, and which have been blocked by the fence as now erected. The Society, therefore, cannot but hope that the Wilts County

Council, without itself undertaking to decide the question at issue, will be of opinion that this is a case which ought to be submitted to the Courts of Law for a decision. It is a case, not only of great importance in itself, but one which may determine many others of a similar character in other parts of the country. It appears to the Society to be obviously one which it was the intention of Parliament in passing the Act of 1894 should be undertaken by a County Council and not left in the hands of private individuals. . . .

The Society, therefore, would suggest that the County Council of Wilts, if unwilling itself through its own legal advisers to undertake legal proceedings in vindication of the rights of the public, should at least undertake to guarantee the costs of such proceedings on the part of the Society to the extent of 600*l.*, for which the Society will undertake that the case shall be adequately and fully presented in a Court of Law.

"The Society have been willing to believe that the owner of the land on which Stonehenge is situate, when erecting the much complained of and hideous barbed-wire fence round the monument and charging an entrance fee of 1*s.* a head, was actuated only by a desire to protect the monument and to raise funds for its guardianship. They have pointed out that there is a much simpler and to him less costly way of effecting such security, namely, by executing a simple deed as indicated by the Ancient Monuments Act of 1882, under which, without the consent of the Treasury, the Government would *ipso facto* be charged with the duty of doing whatever may be necessary to protect and safeguard the monument. Under this process the owner would lose none of his interest in the monument, whatever it might be, except that he could not thenceforward himself injure or destroy it."

Mr. Edward North Buxton stated that the scheme for the purchase of the extensive open space at Lambourne and Grange Hill, Essex, was proceeding satisfactorily. Up to the present he had received promises amounting to about 5,000*l.* from private contributors, while various local authorities in Essex had agreed to provide 13,000*l.* altogether. Mr. Buxton announced that he had been able to secure the offer of an additional area of 12 acres of land at Grange Hill, adjoining the L.C.C. Asylum at Claybury, while the trustees of Earl Cowley had promised to dispose of their interests in the two Woodford Bridge Greens (4½ acres in extent) for 150*l.*, provided the whole scheme is carried out. A further rectangular block of 22 acres of well-wooded land at Lambourne, lying on the Romford-road, could also be secured, and it was of the utmost importance that it should be included in the general scheme, for it projects into the land already offered to the public. The total area now embraced in the proposed open space will amount to no less than 897½ acres, offered to the public for the sum of 32,000*l.* A hope was expressed by the Society that the Corporation of the City of London would eventually make a grant of 10,000*l.* towards the sum of 14,000*l.* still needed to complete the purchase, on the understanding that the 800 acres of common and farm land at Lambourne are placed under the control of the City. It is also hoped that the London County Council will contribute to the purchase of the Grange Hill portion of the scheme, and that further subscriptions will be forthcoming from members of the public in order that the most comprehensive proposal for the extension of Metropolitan open spaces which has been before the public for upwards of twenty years may be carried out in its entirety.

At a meeting of the Wiltshire County Council on Tuesday, Lord Edmond Fitzmaurice, M.P., made a statement with regard to Stonehenge. He said he had received a letter from Sir Edmund Antrobus inviting him to Amesbury to an interview on the subject. In his (Lord E. Fitzmaurice's) opinion it opened up a reasonable prospect of successful negotiations. A notice on the agenda paper with reference to Stonehenge was withdrawn at Lord Edmond Fitzmaurice's suggestion.

GENERAL BUILDING NEWS.

KING EDWARD VII. HOME FOR NURSES, NORTH STAFFORDSHIRE INFIRMARY, STOKE-ON-TRENT.—In the competition recently advertised in our columns for the proposed new Home for Nurses, at the North Staffordshire Infirmary, Stoke-on-Trent, thirty-eight sets of designs were received. Mr. H. R. Price, of Manchester, was appointed assessor to adjudicate upon a number of designs selected by the Committee. His award was considered by the Committee on August 23. The successful competitors are Messrs. R. Stephen Ayling, of Westminster, and A. R. P. Piercy, of Stoke-on-Trent, in whose hands the commission to carry out the work has been placed. The site is a very fine one, on rising ground, and the building will contain about fifty-two bedrooms for nurses and sisters, large sitting-rooms, library, servant's rooms, sick rooms, and the usual offices. It is proposed to lay the foundation-stone in October next. The whole of the necessary funds have been subscribed, the King heading the list with a donation of 105*l.*

SHEFFIELD TOWN HALL EXTENSION.—The Sheffield Corporation Improvement Committee considered the proposed extension of the Town Hall on the 30th ult. It is intended to extend the building on the piece of land facing Norfolk-street and South-parade. The committee decided to consult Mr. E. W. Mountford, the architect for the building, and also to entrust him with the work of extension.

ROWTON HOUSE, WHITECHAPEL.—This building, which has just been opened, is the fifth of a series of "Poor Men's Hotels," known as "Rowton Houses," the property of Rowton Houses, Limited. It has been erected on a site near St. Mary's, Whitechapel Station, and has its entrance frontage in Fieldgate-street. The site consists of two adjoining parallelograms, the larger of which forms the frontage to Fieldgate-street, and has a frontage of 192 ft. by a depth of 129 ft.; the smaller has a back frontage of 75 ft. by a depth of 67 ft., with a total superficial area of 29,500 ft. An abundance of light and air on all floors has been secured by the provision of wide forecourts on all sides of building, and in addition a large inner courtyard, 50 ft. wide, open at its eastern end. Advantage has been taken of the large area of the site to place all the dayrooms used by lodgers (with the exception of reading-room) on the ground floor. The elevations have been erected in pressed Leicester facing bricks, relieved with Fletton bricks and dressings of pinky buff terra-cotta from Mr. J. C. Edwards, Ruabon. The whole of the interior walling, excepting where glazed bricks are used, is built with Fletton bricks. All brickwork throughout the building has been built in Portland cement mortar. The roofs to the front elevations are covered with green slates, nailed direct upon coke breeze concrete slabs, carried upon steel construction; all other roofs are flat concrete and steel construction, covered with asphalt. The ground floor of the site is covered with a thick bed of concrete, upon which, where wooden floors are laid, is solid oak wood blocks, and to other floors cement and granite chippings. The floors are fireproof throughout, formed of concrete and steel, and the staircases and landings are in Portland cement concrete. To avoid a cavity between the surface of the concrete and the flooring, the floorboards are nailed directly upon the concrete in the cubicle floors. Especial care has been exercised in the planning and execution of all the sanitary work, both in the portion underground and the plumber's work. Access is immediately obtainable to any portion of the underground work by the placing of inspection manholes at every change in direction of pipes and in positions that enable all junctions to be easily accessible. Iron pipes, with coated interiors, are used wherever it has been necessary to carry them under the building. A system of electric lighting has been adopted giving the official on each floor of cubicles control of the lights upon that floor: the various rooms on basement and ground floors are controlled separately, one from another, and, in addition, the superintendent has complete control, in the office and meter-room, over all the various sections. Water-closets and urinals are placed outside the buildings in the courtyard, at the north-east of the building, and cut off from the building by means of a cross-ventilated lobby. The work throughout is constructed in white glazed brickwork. The lodgers' cubicles are approached by three fireproof staircases, built in ivory glazed brickwork, two situated at the eastern boundary of the site, one adjoining office, and all at the extreme ends of cubicle corridors. The disposition of the staircases renders it an impossibility for the lodgers to be trapped by fire, in the event of an outbreak, as the cubicle corridors run from staircase to staircase, thereby leaving open a way for retreat in the event of access to one staircase being blocked. In addition, each floor is divided by divisional walls into ten sections, which would check, if not stop, the progress of a fire horizontally. The sectioning of the floors also enables isolation and efficient fumigation in the event of a case of contagious disease. In the reading-room a large portion of the wall-space is occupied by a series of panels emblematic of "The Seasons," painted by Mr. H. F. Strachey, of Stoney Mead, and presented by him to Rowton House as a practical demonstration of the interest taken by the artist in the work. Each season is represented by a single figure and also by a larger composition. Mr. H. B. Measures is the architect under whom the whole building has been carried out.

BAPTIST CHURCH, HULL.—The foundation and memorial stones of the new First Baptist Church on the Boulevard, Hull, were laid a few days ago. The new church, which is Gothic in style, from designs of Mr. T. Brownlow Thompson, architect, Hull, will be of brick, with brick and stone dressings, and will have a spire 110 ft. high. It is intended to accommodate 550 persons, with provision for galleries to increase the sittings to 750. The interior of the building will be of red-wood, of which the seats, which will be open, will also be constructed. There will be an open rostrum, with marble-lined baptistry in front; also large parlour for the deacons, minister's vestry, and retiring-rooms. It is intended to add schoolrooms later. The cost, including fittings, will be 6,000*l.*, irrespective of site. The schoolrooms will be an additional 2,000*l.*

CHRIST CHURCH, LANCASTER GATE, W.—At a sitting of the Consistory Court in St. Paul's Cathedral on the 25th ult., Dr. Tristram, K.C., Chancellor of the Diocese of London, granted to the vicar and churchwardens a faculty authorising them to effect certain alterations and improvements in the church. The faculty extends to the removal of the organ into the east transept gallery, the enlargement of the instrument, and the raising of the floor of the existing organ-chamber to the level of the chancel, and so to provide sittings for those members of the congregation who had occupied seats in the east transept gallery, together with an additional entrance to the chancel. The lights will be transferred from a window, filled with stained glass, which the organ will thus block out, into a window in the south-east end of the church, which is the only one that is now not filled with coloured glass. On the other hand, the shifting of the organ will open out four windows previously blocked out under faculty. The improvements will cost an estimated sum of 2,500*l.*, towards which amount 1,500*l.* is already subscribed. The organ, by R. Harris, 1681, and rebuilt by Willis, was formerly in Winchester Cathedral. It was reconstructed by Bishop & Son twenty-seven years ago.

THE ANGEL TAVERN, ISLINGTON.—This well-known public-house, which really stands within the limits of Clerkenwell parish, is being rebuilt by Messrs. W. H. Lascelles & Co., of Bunhill-row, contractors, after plans and designs made by Messrs. E. J. Eedle & Meyers, for the owners, Messrs. Truman, Hanbury, Buxton, & Co.

PALACE OF VARIETIES, GLASGOW.—The New Pavilion Palace of Varieties, Glasgow, to be built at the corner of Renfield-street and Renfrew-street, will be erected from the designs of Mr. Bertie Crewe, of London. The elevations will be executed in salmon pink terra-cotta, and the windows will be glazed with painted glass. Towers at the angles of the building will be surmounted by electric lights, and another light will be upheld by the principal figure in a group of statuary in the centre of the Renfield-street front. The grand entrance hall is in the Renfield-street elevation. It will have doors of polished and carved mahogany, marble mosaic floor, marble dado, and panelled walls, and from it stairways of polished marble mosaic will lead to the stalls and circle. At the head of the circle stairs is the foyer, treated in a similar manner, from whence mahogany doors lead direct to the lower part of the circle, and another short staircase leads to the upper portion. The auditorium has a width of 76 ft. On the ground floor of the auditorium are stalls and pit. On the first tier is the grand circle, which has eight rows of seating, containing some 340 tip-up chairs, with raised lounges and promenades separated from the seats by marble balustrading. Four private boxes are provided, two reached by the proscenium and two at the back of the hall, where there is also a fireproof cinematograph chamber. Over the circle is a gallery, with fourteen rows of seating and with promenades. There will be lounges for the sale of tea, coffee, cigars, &c., in all parts, and retiring rooms have been provided. The electric light will be used, and the heating will be by low pressure. The stage will have a width of 70 ft., and 58 ft. to the gridiron floor. The dressing-rooms are in a separate fire-resisting block.

THEATRE, LIVERPOOL.—Hengler's Circus, in West Derby-road, has been rebuilt, and will in future be known as the Royal Hippodrome. The architects for the reconstruction of the building were Messrs. Bertie Crewe & A. Shelmerdine, Strand, London. The chief entrance in West Derby-road is fitted with mahogany and glass doors, one leading to the stalls and circle, and the other to the pit. The floor and steps leading from the entrance are laid in mosaics, and the foyer is also decorated in the same manner. The full width of the stage is 95 ft. by 40 ft., and the proscenium opening is 40 ft. by 28 ft. The pit, which will accommodate 1,000 persons, is fitted with continuous seats upholstered in red velvet. In the gallery, which is approached by two staircases 6 ft. wide, there is sitting room for 1,500 persons. There are also eight stage boxes and four at the back of the circle, behind which there are lounges. Adjoining the stage are seven dressing-rooms for the artistes, each being supplied with hot and cold water. The galleries are supported by solid steel pillars. The building is fitted throughout with electricity and gas. From the pit and stalls there are six exits, and from the gallery two, each 6 ft. wide. The Hippodrome will accommodate 4,500 persons. The building contractors were Messrs. W. Tomkinson & Sons, Liverpool, the other firms engaged in the work being:—Decorations, Messrs. De Jong & Co., London; electric lighting by the National Electric Wiring Co.; heating by Messrs. Dawson, Stalybridge; gasfittings, fireproof curtain, and fire hydrants by Messrs. Vaughan & Brown, London; hardwood fittings by Messrs. Dean & Co., Birmingham; and mosaic work by Messrs. Diespeker & Co., London. Mr. George Sheen has carried out the duties of clerk of works.

NEW LAUNDRY, CLEVEDON.—The Clevedon and Portishead Steam Laundry was recently opened. This laundry, which has been erected from drawings prepared by Mr. T. J. Moss-Flower, C.E., Bristol, and carried out under his supervision, occupies a large area of ground at Clevedon close to the sea. The buildings have been specially designed and constructed with every convenience, and with every regard to the requirements of sanitation, thus ensuring safety both to the customers and the workers. An artesian well, at a cost of several hundred pounds, has

been sunk, and the company's water has also been laid on. The building was erected by Mr. W. A. Green, builder, of Clevedon; the Liddle Engineering Co. supplied the machinery and laundry fittings; and Messrs. Mather & Platt the "Archbutt-Deeley" softening apparatus. Blackman's fans are used to ventilate the buildings.

ISOLATION HOSPITAL, MELTHAM, YORKSHIRE.—The cornerstone has just been laid at Cop Hill, Meltham, of an isolation hospital, which is to serve the requirements of the Colne and Holme Valleys. The building, which is to be lighted by electricity generated on the premises, is estimated to cost 23,744*l*., and will accommodate fifty beds. There will be three pavilions and an isolation block. Mr. J. Berry is the architect.

FOREIGN.

UNITED STATES.—A Government Commission has been appointed to prepare plans, and to report on a site and designs, for the proposed memorial to Abraham Lincoln in Washington. The members of the Commission have already agreed to recommend a site not far from the Washington monument and near the site of the proposed bridge across the Potomac to Arlington. The general character of the memorial has not yet been decided upon.——Extensive excavations made at Milwaukee, Wisconsin, have brought to light the remains of an ancient village. Grooved stone axes, hammer-stones, arrow and spear heads, and great quantities of flint chips have been found; the work of excavation is in the care of the Wisconsin Natural History Society.

AUSTRALASIA.—The Council and members of the Institute of Architects of New South Wales have waited on the Mayor of Sydney requesting him to give an assurance that, before the proposed new Building Act is submitted to Parliament, the Institute might be afforded an opportunity of looking over the provisions of the measure, with a view to suggestions of architects being made to assist in the direction of producing as workable and perfect an Act as possible.——A large boot factory is to be erected in Collingwood; Mr. F. Stapley, of that place, is the architect.——At a recent meeting of the Melbourne and Metropolitan Board of Works, it was agreed that the wages of bricklayers employed by the Board should be reduced from 11*s.* per day per week of forty-eight hours to 10*s.* per per day.——The interior of the new theatre at Auckland (N.Z.) is to be of modelled fibrous plaster, and the general scheme adopted is French Renaissance. The architects are Messrs. W. Pitt, of Melbourne, and Messrs. Maloney & Son, of Auckland.——In connexion with the contracts for the erection of two new pavilions at the Prince Alfred Hospital, Sydney, the Master Builders' Association of New South Wales has informed the State Minister of Works that they cannot agree with the conditions of tendering imposed by the Public Works Department, and that their members will not tender for the work. As the Association is a very strong body it is, therefore, doubtful whether the work will be proceeded with unless the conditions are modified.——Banking premises are about to be erected in Sydney for the Union Bank of Australia; Messrs. Baxter & Bovne, of Melbourne, are the contractors.——Mr. H. G. McKinney, M.Inst.C.E., has been elected chairman of the engineering section of the Royal Society of New South Wales.——The plans of Mr. J. Warren Scobie, architect, of West Maitland, have been accepted, in competition, for extensive additions to the Tenterfield (N.S.W.) School of Art.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Messrs. Runton & Barry, architects, of Hull, have removed their offices from Savile Chambers to Victoria Chambers, Bowlalley-lane, Hull.

MANCHESTER SHIP CANAL.—According to the half-yearly report to June 30, the directors are in negotiation for the provision of 500,000*l*. by an independent company for the construction on a portion of the racecourse site of a large dock and transit sheds to be leased to this company for 99 years at a fixed percentage on the amount expended. Power will be reserved to determine the lease on short notice, either during construction or after completion of the works on payment of the amount expended, plus a small premium. The consent of the Corporation of Manchester to the lease has been obtained in accordance with the provisions of the company's 1897 Act of Parliament. The engineer's report states that the depth of water in the Ship Canal and Docks has been fully maintained by means of the dredging plant throughout the entire length of the waterway. Some slight diminution of the quantities of silt and sludge deposited in the upper reaches of the canal and docks has been experienced. The special dredging operations for the deepening of the channel in the estuary of the Mersey, which forms the access to the canal at Eastham, have made good progress. A considerable quantity of the rock which is to be removed has been blasted and dredged in the length immediately below Eastham Locks. The approaches to Irlam Ferry on either side of the canal have been considerably improved, the work having been carried out in accordance with plans which were approved by the District Councils concerned. Shed No. 9, on the north side of Dock No. 8, has been walled in, fitted up, and rendered suitable for the banana trade. The station-master's office at Salford has been completed and is in use; certain other office extension works are in hand. Three new locomotive engines and four new locomotive steam cranes have been provided, and are in use for dock traffic. Since possession of the racecourse was obtained in the early part of the present year, considerable progress has been made with the railway extension works authorised by the Act of 1900. The bridge which is to carry the through railway over the L. & Y. Railway is nearly completed. The retaining walls and embankments throughout have been finished, and the laying of the permanent way has been begun. The construction of the last section of the main road on the boundary of the company's property has also made good progress. The formation of another service railway, which will render a further area of the property recently acquired by the company available for the storage of timber, is in hand. The embankments and slopes of the canal generally are in good condition, and the works throughout have been efficiently maintained. The transit shed on the north side of No. 8 dock, constructed by the Manchester Ship Canal Warehousing Co., Ltd., has been completed, and is in use for traffic purposes.

HOLY TRINITY CHURCH, STEPNEY.—On Thursday, July 31, Dr. Tristram, K.C., Chancellor of the Diocese of London, gave judgment in an important case recently heard in the Consistory Court. In September, 1900, Dr. Tristram had ordered a faculty to issue for a proposed enlargement of the east aisle of the chancel, which is at the north end of the church, to form a side-chapel and the erection of a clergy and a choir vestry on either side of the south end, with a parish-room over the two vestries to extend across the south end. The parish-room, having a capacity for 240 persons, was intended for vestry meetings, missions, and other religious services, Sunday schools, and similar purposes. The cost of the alterations was estimated at 2,000*l*. But Lord Tredegar, as chief ground landlord in the parish, and whose father had given the site of the church and its graveyard, took exception to the altering of the front entrance of the church so as to render it out of keeping with the original design, and suggested that the vestries and parish hall should be built at the north, instead of the south, end. On June 27, 1901, the Court issued a faculty, in default of any opposition thereto, to authorise the building of a clergy and choir vestry on the north-western side, with a parochial hall abutting against the end of the chancel. In November last, after the work had been begun, the London County Council took proceedings under the Disused Burial Grounds Act, 1884, and in March filed a petition for revocation of the supplemental faculty, on the grounds that the Act forbids the erection of any buildings upon any disused burial-ground, excepting for the purpose of enlarging a church, chapel, meeting-house, or other place of worship, and that, in their opinion, the projected parochial hall did not come within those exceptions. Dr. Tristram, having satisfied himself as to the cause of the Council's non-appearance to the previous citation, made an order in April for a further hearing of the case. In the result he has adjudged that, whilst the Court had jurisdiction to issue a faculty for the erection of a vestry hall in the situation proposed and communicating with the church, the desired faculty should be so worded as to preclude the room from being used for secular objects, and that he felt able to authorise its use as a vestry room for ecclesiastical and charitable purposes. He also proposed to make a rule, under 10 Geo. IV., c. 53, that in future the Council should be served with due notice of any application made to the Court for a faculty to enlarge a building standing on a closed burial-ground.

THE MEN'S SHELTER, ALL HALLOWS CHURCH, LONDON-WALL.—The Rector of All Hallows announces his inability to carry out his project for the erection of a shelter, to be used in the day time, in the parish churchyard. The resources at his present command are not equal to the heavy cost of the requirements of the District Sanitary Authorities and the London County Council. The latter body required that, consequent upon the excavations made, the floor of the building should be carried upon iron girders, involving an additional and unexpected expenditure of 130*l*. It is stated that the Corporation had approved of the original intention to lay a bed of concrete so as to seal the ground, and that the Medical Officer of Health made a subsequent demand, for reasons of sanitation, that the ground should be excavated to a depth of 3 ft. (and since to a depth of 3 ft. more), and all human remains be removed and reinterred. The excavation and reinterment has cost 215*l*., the Burial Board claimed 106*l*. 15*s*. 6*d*., and the Medical Officer of Health claimed 21*l*. as their fees.

APPOINTMENT.—Mr. C. H. Brodie, A.R.I.B.A., has been appointed their Surveyor by the Directors of the National Provincial Bank of England, Ltd.

MUSEUM OF PRACTICAL GEOLOGY, JERMYN-STREET.—We are asked to state that the Museum will be closed as usual from the evening of August 8 until the morning of September 10, 1902.

OLD WOODEN WATER CONDUITS.—The laying of new gas mains in Finsbury-pavement has been the cause of a discovery in the shape of old trunks of trees which were in old times laid as water conduits. Finsbury-pavement is on the northern edge of the City at Moorgate-street, and the conduits were found barely 4 ft. below the surface, helping to support the ground on which for some hundreds of yards the North Metropolitan tramcars run. The trunks of trees, as they were raised from their bed, proved to be in a wonderful state of preservation. They had been hollowed out to a bore of 6 in. or 8 in., the trees in some cases being from 4 ft. to 6 ft. in girth. One end of each length had been pointed to fit into the hollow of the next, some of the trees being 20 ft. or more in length. There is an opinion that they must have been 150 years in the ground. They are supposed to have been laid for the waters of the New River Co., from the reservoir at Clerkenwell to the once fashionable parts of the City across Finsbury Fields.—*Times.*

HOME FOR CRIPPLED CHILDREN, SOUTHPORT.—The Bradstock Lockett Home for Crippled Children has just been opened at Southport. The site of the home is situate about 50 yards to the east of the Marshside-road, parallel to the inner sea embankment. The main building stands back from the proposed new road, from which it is approached by a broad drive. The laundry block and stable are arranged upon the north-east corner of the site, and form a protection to the boys' ward from the winds coming from that quarter; the girls' ward being similarly sheltered by the projection of the administration block. The principal entrance, in the centre of the south front, opens into a tiled vestibule, and thence by a short corridor into the main hall, from which the main corridor runs east and west to the boys' and girls' wards. The visitors' waiting-room, the recreation-room, and chapel, all facing south, are entered from the south side of the corridor, and the dining-room, kitchen, and lady superintendent's private stores from the north side. The boys' and girls' wards are 40 ft. long, 22 ft. wide, and one story in height, and contain sixteen beds each. The wards are warmed and ventilated by Shorland's double-fronted Manchester stoves, and the ventilation is by Tobin's tubes and gratings, and the special hopper sashes provided at the bottom of each window, the upper sashes being also made to open. The schoolroom has at one end an open arch, through which is a raised chancel, which is screened off by a revolving shutter when the room is used for teaching or other purposes. The recreation-room, adjoining the schoolroom, contains the children's play lockers ranged round the walls, the tops forming a continuous seat. Just across the hall, and next to the kitchen, is the general dining-room of the building, 25 ft. long and 20ft. wide. A "special" ward, entered from a separate corridor, is placed near the isolation ward for doubtful cases the doctor may wish to keep under observation. An isolation block, containing a ward for four beds, nurses' duty room, and stores, &c., is placed on the first floor. All the rooms and corridors on ground floor, except bathrooms, latrines, and kitchen department, are laid with pitch-pine blocks upon a concrete foundation. The premises are lighted throughout by electricity. The main fronts are faced with Accrington red bricks, relieved by bands and dressings of Longridge stone. The roofs throughout are covered with Westmorland green slates, finished with red terra-cotta ridge tiles and finials. The architects were Messrs. Ellison & Son, of Liverpool. Messrs. Duxfield Bros., of Southport, were the contractors.

LEGAL.

IMPORTANT BUILDING DISPUTE AT NORWOOD.

THE cases of the Perpetual Investment Building Society *v.* the Mayor, &c., of Camberwell, and Hutchings *v.* the Same, came before Mr. Justice Darling and a common jury in the King's Bench Division, on the 24th and 25th ults., the hearing concluding on the 31st ult.

Mr. Ellis Hill appeared for both the plaintiffs, and Mr. Low, K.C., and Mr. Henlé for the defendants.

Mr. Ellis Hill, in opening the case, said that the actions, which would be tried together, were brought by both sets of plaintiffs against the defendants to recover damages for alleged negligence, the alleged negligence being that defendants, in repairing a drain underneath a portion of the houses which belonged to the plaintiffs, had neglected to shore up the houses and to properly fill up the excavation made, the consequence being that a portion of each subsided, became dangerous, and had to be pulled down and rebuilt. The main defence was a denial of the negligence complained of. The Perpetual Building Society were the owners of a house known as No. 349, Crystal Palace-road, Norwood, Mr. Hutchings being the owner of the adjoining house, No. 347, Crystal Palace-road. These houses were semi-detached, there being a passage some 7 ft. or 8 ft. wide, which ran between the two houses. In April, 1901, the defendants served notices on both the plaintiffs to abate a nuisance which occurred in a drain which carried the sewage from the houses into the common sewer

which ran up and down the Crystal Palace-road. When the plaintiffs came to open the ground to see what was the matter, it was discovered that the drain in question carried the drainage of four houses in the road, and therefore the plaintiffs were not responsible for the nuisance, because under the Metropolis Management Act if a drain took the drainage of more than one house then the drain became a sewer, and all sewers under the Act became vested in the Local Authority—in this case in the defendants. Therefore when the plaintiffs opened the ground and found that the drain was a sewer taking the drainage of several houses they denied that they were the guilty parties which caused the nuisance, and alleged that the defendants, who owned the sewer, were responsible. The result was that the plaintiffs communicated these facts to the District Council, and they set to work to remedy the nuisance, and in July of last year they began to make the excavation which led to the destruction of the back additions of both of the plaintiffs' houses. When defendants came to the place between the two houses where the drains branched off they opened them up and carried the excavation under the back additions of both Nos. 347 and 349, Crystal Palace-road. After the defendants had re-laid the drains, filled up the excavation, and finished the work towards the end of July or beginning of August it was discovered that the back additions of both houses were giving way. It went on so quickly and seriously that in the middle of August the London County Council served the plaintiffs with notice that the back additions had become dangerous, and that the plaintiffs must shore them up. That was done, but afterwards the back additions were declared to be still dangerous and the plaintiffs had to pull them down and rebuild them. When the back addition to No. 349 was pulled down it was found that the foundation was completely cut away, and instead of being built up with concrete or with brickwork and cement, defendants had simply put a sort of concrete inside it which did not contain the proper amount of cement, which was perfectly useless, and which accounted for the collapse of the building. In No. 347 the same cutting away was done, but in this case the defendants had not filled up the place with concrete at all, but simply with earth. The plaintiffs admitted that the defendants were quite within their rights in making the excavations, but they said that the defendants ought not to have touched the back additions to these houses or interfered with the foundations without shoring up the back additions so as to ensure that no movement would take place. Plaintiffs also blamed the defendants for not having, after they had cut away the walls to the back additions, filled them up properly.

Mr. Low, in answer to his Lordship, said he thought that the only question in the case was whether the defendants in what they had done had been guilty of negligence.

Mrs. Sophia Moore, examined by Mr. Ellis Hill, said she was the wife of W. R. Moore, the tenant of No. 349, Crystal Palace-road, and she remembered the people employed by the defendants coming to relay the drain there. After they had laid the concrete outside the side door of the back addition, she noticed that there was a large crack crossing the concrete. The crack was about ½ in. wide. Afterwards she and her husband were ordered to leave the house, as it was not safe. Subsequently there appeared a crack in the wall which you could put your arm through. She first saw the crack in the concrete the morning after the men had finished relaying the drain.

Cross-examined by Mr. Low: They took possession of the house on June 24, 1901. No hole had been dug before they came in.

Wm. Cator, examined by Mr. Ellis Hill, said he had been employed by a Mr. Porter to connect up the drain. That was after a portion of it had been laid by the defendants' people. He saw how they had filled in the excavation which they had made. They filled it in, underneath the wall, with concrete which was very bad, or poor. It was either bad cement, or there was not enough cement in it. Defendants' men had cut away the footings of the wall above the pipe, but that they were obliged to do. He saw the back addition after it had begun to subside. The crack in the cement was nearly opposite to the place where the drain went through the walls. He saw no signs of "giving way" before the defendants' men had done the work. The soil that was being excavated was stiff clay.

Cross-examined by Mr. Low: The concrete footings of the walls were cut away. He saw somebody, one of the defendants' men, cut them away. There were about 18 in. of concrete footings under the walls.

Mr. H. S. Saunders, an architect and surveyor, A.R.I.B.A. dangerous structures surveyor to the district, examined, said he was called in after the subsidence had taken place about the time of the dangerous structure notice. He had heard the account given by plaintiffs' witnesses as to how the holes in the foundations were filled in. That was not the proper way. It was not right to carry the drains under the back additions without shoring up. In his opinion the cause of the subsidence of the back additions was want of due precaution in carrying out the work.

Cross-examined by Mr. Henlé: He had not examined the concrete laid by the Local Authority. He had no knowledge of what the concrete was, or of the foundations of the houses as they originally stood. The walls, unquestionably, were properly "toothed" all the way up.

This being the plaintiffs' case, his lordship suggested that it would be advisable to have an examination of the concrete under the adjoining houses, which were admitted to have been built at the same time as those in question. If the concrete there was found to be proper concrete, it would more or less settle that question. The other matter in dispute was that of the alleged negligence in not properly "shoring up." That could be discussed after the examination of the concrete had been made.

Mr. Ellis Hill, after consulting his clients, said that he was willing that this course should be adopted, trial holes being dug in the presence of two expert witnesses.

The case accordingly was ordered to stand over for the examination of the concrete, when it was decided that his lordship should resume the hearing of the case without the assistance of the jury.

The jury were accordingly discharged.

On the 31st ult. the hearing of the case was resumed, when Mr. Saunders, recalled and examined, said that on the previous Saturday, together with Mr. Mullins, the Surveyor to the Council, he visited the adjoining houses and trial holes were dug. Three holes were made at No. 345, at the back. With regard to the holes nearest No. 347 there was no concrete. There were two footings which were very good ones. The walls should have had concrete. The hole at the end of the back addition had no concrete. There was a third hole, and there he found concrete in the footings to the extent of 4 or 4½ in. in thickness. The concrete was not mixed as it should have been. He made a hole in No. 351, and found 7 in. of concrete under the bricks. It was burnt ballast, badly mixed, and the particles were loose. It was not proper to put in the drains without shoring up the houses.

Cross-examined: The drains should have been carried round the houses, and not through the houses.

Mr. Hill: And then we should have been left our right to support from the soil between the pipe and the footings of the wall?

The witness replied that that was so.

His Lordship: Taking these houses as built in the ordinary suburban London way, the only question appears to be what should the defendants have done? Should they have shored up or not?

Mr. Low agreed that this was the main question. He would call his expert witness as to this.

Mr. Ellis Marsland, District Surveyor to the London County Council, examined, said he was well acquainted with the houses in question, having condemned the back additions. He examined the buildings before he condemned them. He was aware that the defendants had put in a new drain under the back additions.

Mr. Low: What, in your opinion, caused the state of things you saw there?

The witness: The shallowness of the foundations, the drought and a large tree growing in the rear of the two back additions. There was a shrinkage of soil, that being clay. In my opinion the local authority was guilty of no negligence in the way they did their work. I have a list of some thirty houses in the neighbourhood of East Dulwich that sunk during this dry summer and the re-building of portions became necessary.

At the conclusion of the evidence of the witness his lordship expressed himself satisfied and said he would hear Mr. Hill.

Mr. Hill submitted that the defendants, by doing as they had done, had deprived his clients' buildings of the right of support and had been negligent and therefore liable.

His Lordship, in giving judgment, said it was for the plaintiffs to prove their case, and he was not at all satisfied that that which had occurred to these houses, which were badly-built houses of the speculative building type and could not last long, was in any way due to anything done by the defendants. Holding that view of the case, no point of law arose. The plaintiffs had not discharged the burden of proof which was incumbent upon them, and there must, therefore, be judgment for the defendants in each case with costs.

INJURY TO BUILDINGS AT LIMEHOUSE.

THE case of G. Angus & Co., Ltd., *v.* W. Gibbs, Ltd., came before Mr. Justice Kekewich in the Chancery Division on the 1st inst. It was an action by the plaintiffs against the defendants to recover damages in respect of injury to premises, and for an injunction restraining the continuance of the piling of sand, &c., against plaintiffs' wall so as to cause injury to their premises.

Mr. Warrington, K.C., and Mr. Dill appeared for the plaintiffs; and Mr. Stewart Smith, K.C., and Mr. Stone for the defendants.

Mr. Warrington, in opening the case, said the action was brought by the plaintiffs, the lessees in possession of a house and wharf at Limehouse, for damages for injury done to a portion of the premises by the defendants, and for an injunction restraining or permitting the injury occasioned by allowing the heaping against the eastern wall of the plaintiffs' premises of a quantity of sand, gravel, and ballast. The learned Counsel said that a quantity of sand, gravel, and ballast had been heaped against this wall by the defendants, and it had had the effect of forcing it inwards. The statement of claim alleged, and he thought he should be able to prove, that the plaintiffs' premises were entitled to lateral support from the defendants' house which had been pulled down. It was on the site of the old house that the heap of stuff had been placed. He thought it would turn out that the damage was occasioned by the withdrawal of the support which had weakened the plaintiffs' wall and rendered it subject to damage by external pressure. The houses were two old houses at Limehouse on the north bank of the river. The wall of plaintiffs' house, which had adjoined the defendants', had been rendered unsafe, and if the pressure continued it would be much further damaged. Complaint had been made to the defendants requiring the immediate removal of the sand, gravel and ballast and some part of the sand had been removed but not the gravel.

The defence set up was that the defendants were in no way liable for the damage done and that the damage was not due to any act on their part. Lately extensive dredging operations had been going on in the river, and this, it was alleged, had caused the shifting in the sand, &c., beneath the foundations of the plaintiffs' wharf, which had in turn caused the damage to the wall complained of.

Evidence was then called on behalf of the plaintiffs bearing out Counsel's opening statement.

Mr. Egerton, civil engineer, examined, stated that in his opinion the cracks in the wall were due to sand, &c., which defendants piled against it. The stuff was piled some 12 ft. high against the wall, and extended into the yard some 25 ft.

Cross-examined: He did not think that the recent dredging operations in the river had occasioned the damage by a shifting of the subsoil. It was true that many of the cracks in the wall did extend towards the river.

Evidence of a similar character was given by Messrs. Leslie & Cooper, civil engineers.

A builder was called, who stated that he estimated that the cost of rebuilding the wall at 120*l.*

This was the plaintiffs' case.

On behalf of the defendants, Mr. R. Kerr, civil engineer, gave evidence. He said that in his opinion the shifting of the subsoil had caused the cracks in the plaintiffs' wall. He did not think they were caused by pressure from the outside. There was every indication that the bottom portion of the wall had slipped away from the top portion. Near the cracks the wall was practically plumb.

Cross-examined: He went on the roofs of the premises, and saw that the wall had a slight twist in it, but no bulge due to pressure.

Mr. J. M. Knight, civil engineer, late Surveyor to the Mile-end Vestry, stated that he had examined the *locus in quo*, and found that the plaintiffs' was a very old building. He examined the cracks in the wall, and in his opinion they were due to a movement in the front wall caused by a subsidence. The cracks, in his opinion, were not due to lateral pressure.

Cross-examined: There was a small crack in the wall on the opposite side of the building, but this was not serious. He attributed the cracks to subsidence vertical and lateral towards the river. He thought that 25*l.* would cover the damage done.

After hearing other evidence, his Lordship, in giving judgment, said that in this case, as in many others, he had to deal with expert evidence, and it was evidence which was exceedingly difficult to understand. Expert evidence was exceedingly difficult to deal with when it was evidence of opinion. He had to consider such evidence in the present case, but he had no doubt himself that the weight of evidence was strongly in favour of the cracks having been caused by lateral pressure. He found the suggestion that the cracks had been caused by something else not in accordance with the facts in the case. He thought that the lateral pressure of sand, gravel, and ballast had caused the damage complained of. He had not the materials in this case to properly assess the damages, but he thought that 40*l.* was quite sufficient. If he had given too little the plaintiffs had themselves to blame. His judgment, therefore, was for the plaintiffs for 40*l.*, with the injunction asked for and costs.

Judgment accordingly.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

7,108.—WATER SUPPLY (DOMESTIC): *F. & M. Craig, and R. Highet.*—The invention is applicable to both siphon-discharge and valve cisterns. The inventors lay a branch pipe in communication between the customary inlet-cock and the flushing pipe. As the cistern becomes filled an after-flush will be delivered, whilst an orifice obviates siphoning.

7,122.—CONSTRUCTION OF SOUND-PROOF AND FIRE-PROOF BUILDINGS: *H. F. Young.*—Metallic joists, girders, and standards, ribbed recessed casings, corrugated ribbed tiles, and concrete, &c., are used in the construction. Netting or lathing-

sheets having dovetailed corrugations, and tiles are hung with pins from the floor, or with swivelling hooked pins from the side flanges of the casings, which are pierced for the circulation of air through spaces beneath the floor and the joists. A similar method is used for partitions having internal air-spaces with surfaces of plastered lathing or decorative tiling. Middle vertical webs that will engage with recesses cut in the sides of the corrugated tiles are formed by the joining of the flanged halves of the casings.

7,126.—Flooring and Paving: *J. Temperley, J. R. Temperley, and C. Temperley.*—The slabs, made of wood, &c., are joined to one another with pins, rods, or dowels inserted through them, whilst in the case of adjoining blocks or slabs the halves of divided dowels are forced asunder with wedge-ended keys that are driven into keyways for joining the blocks together.

7,141.—Means of Purifying Air in Mills: *W. Rachel.*—For separating dust from the air is devised a dust-collector consisting of a lower conical portion and an upper cylindrical portion (which should be of metal) having annular flanges, to be clamped together, which may be turned around strengthening rods; otherwise the free ends of plates that are bolted to one of the adjoining edges, which is straight, are turned around the annular flange of the other edge.

7,161.—A Gas-meter:—*Soc. Industrielle des Compteurs.*—The casing, in two portions, has an outlet, fitted with a controlling diaphragm, and an inlet for gas, a plugged outlet for liquid, and a plugged inlet for some fixed liquid—such as glycerine or oil; a skeleton frame carried by floats and having a middle socket is set within the casing; the socket takes the spherical pivot of a circularly-oscillating bell from the top to the bottom of which are arranged a set of spiral partitions—these being so shaped that a vertical section is always curved to an arc concentrical with the point about which the bell oscillates. The gas, after flowing around the compartments of the bell, escapes from the periphery, causes the bell to oscillate, and then flows through the outlet, and so past the valve of the float and through holes in a disc to the outlet of the meter. In another form the spherical pivot of the bell serves as the float; as the bell oscillates it works the recording mechanism.

7,178.—Construction of Continuous Forced-draught Kilns: *W. B. Hughes.*—The furnace is disposed along one wall of each chamber, a screen wall with openings being interposed between the chamber and the furnace, a nozzle inside a cone delivers a jet of heated air under pressure to the ashpits severally, and air from the ashpit is conveyed through a passage to the space over the fire, whilst hot gases from one chamber to the next one pass through openings in the partition walls. In the floor of each chamber, on the side opposite the furnace, are outlets into two flues underneath, which rise in the middle division wall up to the main flue, the two flues serving respectively for the inner and outer ends of the chamber. Hot air from a chamber in which burned bricks are being cooled will dry green bricks in another, when they are dried a fire is lighted in the furnace, the hot gases flowing into the main flue, then, after the bricks have been burned and the fire has died out, hot air from the bricks is conveyed into the adjoining chamber wherein are dry green bricks, and also that it may dry bricks in a third chamber.

7,206.—Means of Locking Gas and other Cocks and Valves: *E. L. Newbigging.*—Each of the arms of a two-armed clamp is joined at one end with a hinge and is fastened at the other end with a padlock. There are slots in the arms which will secure the tap-handle. The appliance can be made in various suitable forms for different kinds of taps. In one shape one arm is fashioned as a U, and a squared hole is cut in the other arm to take a spindle having a squared end.

7,224.—Lead Presses for Forming Pipes, Armouring Electrical Cables or Conductors, and similar uses: *E. A. Clarvmont and J. Stratton.* The lead press has a die that can be adjusted with a hollow screw, and has a guide-sheath around it. The sheath, which is bevelled, constitutes a hoop, in part, around the die, and also has a hollow screw for its adjustment, together with a guide-stop that forms a guide or core for the cable.

7,240.—Subaqueous Structures and Buildings, Quay-walls, Wharfs, &c.: *F. Hennebique.*—The invention relates to the building of retaining-walls, docks, dams, wharfs, and so on. A quay-wall, for example, is built up from cases or caissons, of which the height is the same as that of the wall, the caissons being moulded of strengthened beton cement. Each caisson has an open top and side walls, and a closed bottom having, it may be, projections that are strengthened with ribs. When the caissons have been floated into their places, cement or other building material is filled into the chambers formed by the partitions, and the abutting ends of adjoining chambers are cemented to one another. Piles, to be afterwards secured with cement, may be driven through the bottoms, and the ground underneath can be strengthened with sand or cement forced in under pressure through manholes.

7,258.—Removal of Paint, &c.: *E. Geoffroy.*—For removing paint, and so on, from surfaces a composition is made up of wheaten flour, caustic soda, water, black soap, caustic potash, American potash, lime-water, ammonia, glycerine, and essence of mirbane. The order in which the ingredients are to be mixed is specified.

7,276.—Apparatus for Well Doors: *T. Humphrys and S. G. Read.*—For opening and closing the doors automatically. As the cage rises or sinks to a landing, a plate upon it will strike against a projection or bolt, which moves in opposition to a spring enclosed in a box. On the bolt is a pin which moves in a slot cut in an arm. The lower end of the arm is pivoted, its upper end is set in engagement with a pin that projects from the sliding door.

7,301-2.—Steam Road Rollers: *J. Scholl and C. K. Longenecker, and C. L. Heisler.*—The improvements include a power cylinder for steering purposes, a front roll as heavy and as big as the rear roll, means for a ready removal of the boiler, the relief of the boiler from any other stress than that of steam pressure, and freedom of motion for the front roll over an uneven surface whilst the adjusting pull or push is being applied at the axle ends. Side plates, joined to one another with braces or cross-bars, constitute the main frame. A neck, beneath which the front roll turns, is formed by a cutting away of the front ends. A yoke, which is pivoted to a horizontal king-post and is linked to a horizontal lever-beam, joins the axle to the frame. The upright boiler, carried by legs at about the middle of the roller, has in front of, and about it, a tank which is formed with the walls of the frame, and is fitted with a fuel-hopper above it. A rear cross-piece sustains, for the greater part, the two-cylinder engine which drives the rear axle by means of a crank shaft and a train of gearing. A steam cylinder, working through a piston rod and a link, works the horizontal steering beam. (7,302) A road roller adapted also for drawing vehicles, &c., has its front roll made in three sections, and a horizontal driving engine carried on the top of the frame, which consists of two side sheet-steel plates which at the front form a neck for the post to which the yoke of the front roll is pivoted. To the enlarged head of a rod worked by the steering steam cylinder, is pivoted a lever to which the stem of the slide valve of that cylinder is joined—the lever being also pivoted to a nut upon the rod of the hand-steering wheel. In the event of any obstacle turning the front wheel aside, the consequent automatical adjustment of the slide valve will cause the roller to return. From the steering-piston a rear rod extends into a hydraulic dash-pot, and a pipe, fitted with a check-valve for preventing the return of water from the dash-pot, joins the steering-cylinders and the rear ends of the dash-pot together.

7,308.—Fire-proof Construction: *New Jersey Wire Cloth Co.*—Cross-bars, or clamps, and bent round rods, are affixed to, or woven into, reticulated lathing or sheets of wire netting, and secure their edges to one another. The ends of the clamps may be turned downwards, by which means the edges of the sheets will be sustained and their sagging prevented. A filling of cement or concrete completes the arch, or floor, and a ceiling may be hung from the beams in the ordinary manner.

7,323.—Manufacture of Lime: *H. P. Dodge.*—After freshly-burned lime has been finely pulverised it is quickly mixed with water in the open air, and then, when cool, again pulverised, if desired, and sifted, or screened. The employment of a lime that contains a certain amount of magnesia will, it is stated, yield a 'product that will neither swell nor cake when kept during a long time.

7,340.—Hydraulic Rams and their Fittings: *R. Rackham.*—The hollow stem of the pulse-valve, which contains a spring, has openings that admit air into either the body of the ram or the suction-chamber. The stem is extended into a little tank wherein water is kept at a level that will prevent too much air from passing between the stem and its guide. The top and bottom fittings of the gauge-glass have plugs the unscrewing of which will uncover the radial blow-holes. In a variant adaptation a cap is used for closing the holes, under normal conditions, but the unscrewing of the cap will set the holes in communication with one another.

7,387.—Portable Bridges: *A. Klönne.*—Bars jointed together in lazy-tongs fashion, and other bars that are jointed to one another and to the lazy-tongs framing, constitute the side girders. Guide rollers that run upon uprights are fitted on to the ends of one of the bars, and at the several joints are U-clips that will engage with cross rods of the framing as the bridge is extended. The bridge is pivoted on to a carriage, and is to be worked with cranks, pinions, and racks joined to a cross bar on the frame.

7,388.—Treatment of Sewage and Effluents: *P. D. Hahn and O. Lens.*—The sewage or other matter is deodorised and clarified with a solution of the hydrate of some alkaline earth. When the solids have been precipitated, the clear liquid is run off and compressed air is admitted. As the process is being carried on hydrate is mixed with the sewage so as to keep up re-action of the liquid alkaline; then air is drawn through until the liquid becomes slightly acid.

7,427.—Fittings for Stables: *T. R. Reed.*—A separating screen or bail is made of trellised or linked work, which is fastened with rings or eye-bolts to tubular rails or bars above and below. The upper rail may be hung from the beams, or be fastened to the manger or framework with rings that are looped over hooks.

7,455.—A Circular-saw for Stone and Cold Metal: *J. Hamilton.*—A radial frame that swings upon an axis carries the saw at its end. Worm gearing and bevel gearing transmit power from the shaft to the saw, which takes a feed or return motion from a worm that is geared to a toothed rack secured to the swinging frame. Worm gearing from a cross-shaft drives the axis of the feeding worm. The cross-shaft can be turned in both directions by open and crossed belts and a clutch. A yielding feed and compensation for inequalities in the rim of the saw are provided by means of a spiral spring, which is set between the frame and the worm gearing.

7,466.—Stone-Sawing: *G. Armitage & Sons and S. Keighley.*—Slides or saddles upon pillars carry a shaft to which the saw-frame is linked. The slides sustain guides for the frames and to their ends are affixed chains that embody length-adjusting screws which feed the slides and pass around the guide-wheels and the driving-sprockets. Worm gearing and bevel gearing from a shaft drive the sprocket-wheels, and the shaft may be driven by means of fast and loose pulleys upon another shaft.

MEETINGS.

August 11 to August 16.

Institution of Junior Engineers.—Summer meeting: Visiting works, &c., at Blackpool, Fleetwood, Barrow-in-Furness, Liverpool, and Preston.

Wednesday, August 13.

Institute of Sanitary Engineers, Ltd.—Examination and Literary Committee. 4 p.m. General Purposes and Finance. 4 p.m. Election Committee. 5.15 p.m. Council Meeting. 7 p.m.

Saturday, August 16.

Architectural Association.—Fourth summer visit, to Foot's Cray Place and to the church.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

July 15.—By Nicholson, Greaves, & Co. (at Sheffield).

Sheffield, Yorks.—The Neepsend Rolling Mills, area 4,677 yds., u.t. 53 yrs., g.r. 58*l.* (as a going concern)	£10,000

July 16.—By James Eley (at Boston).

Frampton, Lincs.—Frampton House and 63 a. 0 r. 35 p., f.	5,875
Farmhouse and 73 a. 2 r. 34 p., f.	4,250
Enclosure of land, 3 a. 2 r. 31 p., f.	280
Four cottages and 5 a. 0 r. 18 p., f.	620
Kirton, Lincs.—Enclosures of land, 27 a. 1 r. 2 p., f.	2,270

July 22.—By Fox & Vergette (at Peterborough).

Newark, Northants.—Eight freehold Fields, 26 a. 2 r. 29 p., f.	1,415
Peterborough, Northants.—Fengate-rd., three cottages and 0 a. 0 r. 18 p., f.	205
Storey's Bar-rd., three enclosures, 12 a. 2 r. 8 p., f.	720
Storey's Bar-rd., building land, 6 a. 2 r. 14 p., f.	580
Padholme-rd., enclosure of land, 35 a. 0 r. 30 p., f.	1,070
First Drove, &c., various enclosures, 113 a. 2 r. 30 p., f.	6,405
North Drove, Osier Holt, 1 a. 3 r. 18 p., f.	200
Middleholm, Northants.—Various enclosures, 196 a. 1 r. 0 p., f.	7,150
Farcet, Hunts.—A freehold holding, 28 a. 0 r. 30 p.	810
A freehold fen field, 5 a. 0 r. 18 p.	190
Peakirk, Northants.—Glinton Fox Cover, 9 a. 3 r. 24 p., f.	510
Over Waterville, Hunts.—Three enclosures, 9 a. 3 r. 10 p., f.	480
Woodstone, Hunts.—Freehold house and 0 a. 0 r. 20 p.	120
Stanground, Hunts.—Two freehold cottages and 0 a. 0 r. 13 p.	130

July 23.—By J. Carter Jonas & Sons (at Boston).

Kirton, Lincs.—A freehold estate, 211 a. 0 r. 30 p. (in lots)	9,605

By W. J. May & Son (at Camelford).

St. Kew, Cornwall.—Whitehall Enclosures, 12 a. 0 r. 12 p., f.	320
Trewane Farm and Mill, 247 a. 2 r. 27 p., f.	3,500
Moiety of Ween's Farm, 117 a. 0 r. 32 p., f.	540
Lanteglas, &c., Cornwall.—Tretherne and Lobbs Cottage Farm, 176 a. 0 r. 34 p., f.	2,500
St. Teath, Cornwall.—Moiety of Trevilly Parks Enclosures, 28 a. 2 r. 1 p., f.	260
Moiety of Highsteps and Restarlick Farm, 87 a. 0 r. 38 p., f.	392

By W. Dew & Son (at Denbigh).

Bodfari, Denbigh.—Dregoch Isaf and Uchaf and Maes Sheat Farms, 110 a. 3 r. 17 p., f.	3,500

July 24.—By Grimley & Son (at Birmingham).

Bewdley, &c., Worcester.—The Bewdley Estate, 933 a. 3 r. 7 p., f., including the Manor of Dowles (in numerous lots)	34,548

By Baxter, Payne, & Lepper (at Erith).

Erith, Kent.—High-st., eight freehold building sites	1,830
Bexley-rd., four freehold building sites	315
Bexley Heath, Kent.—Pickford-rd., Glenthorn, f., y.r. 31*l.* 10*s.*	400

By John Margetts & Son (at Banbury).

Fritwell, Oxon.—Inkerman Farm, 168 a., f., y.r. 120*l.*	2,025

By Oakden & Co. (at Eastbourne).

Hailsham, Sussex.—Woodside and 3 a. 0 r. 19 p., f.	3,450

By PERCIVAL HODSON (at Southgate).
Southgate.—1 and 2, Sydney-villas, f., w.r. 36*l.* 8*s.* £395
By Messrs. IRELAND (at Fakenham).
Twyford, Norfolk.—A freehold and copyhold farm, 91 a. 2 r. 20 p. 2,000
July 25.—By BIDWELL & SONS (at Cambridge).
Cambridge.—28, Green-st. (S), f., y.r. 64*l.* 1,150
12, Trinity-st. and 29, Green-st. (offices), f., y.r. 150*l.*, subject to annuities of 78*l.*, lives aged 73 and 66 2,500
Cherryhinton, Cambs.—Enclosures of land, 9 a. 3 r. 16 p., f. 310
Eversden, Cambs.—Freehold farmhouse, and 8 a. 3 r. 30 p. 550
Enclosures of land, 43 a. 3 r. 20 p., f. 1,020
Burwell, Cambs.—Freehold house and 4 a. 0 r. 23 p. 210
Enclosures of land, 39 a. 1 r. 10 p., f. 901
Freehold farmhouse and 5 a. 2 r. 8 p. 290
Reach, Cambs.—Enclosures of land, 9 a. 0 r. 26 p., f. 5
Swaffham Fen, Cambs. Enclosures of land, 48 a. 1 r. 4 p., f. 720
Upware, Cambs.—The Field Farm, 61 a. 1 r. 38 p., f. 1,700
Howes Farm, 185 a. 3 r. 38 p., f. 750
Enclosures of land, 8 a. 1 r. 24 p., f. 200
Wicken, Cambs.—Freehold fen land, 15 a. 0 r. 3 p. 200
Waterbeach, Cambs.—Dog and Duck Farm, 35 a. 3 r. 28 p., f. 625
Enclosures of land, 37 a. 3 r. 1 p., f. 610
Two freehold cottages and 0 a. 0 r. 21 p. 150
Over, Cambs.—Enclosures of land, 44 a. 1 r. 16 p. f. 1,960
Steeple Bumpstead, Essex.—Enclosures of land, 10 a. 1 r. 28 p., f. 220
Somersham, Hunts.—A rent-charge of 4*l.* 12*s.* 10*d.* 100
By Messrs. KEMSLEY (at Epping).
Epping, Essex.—Lindsey-st., three enclosures, 16 a. 0 r. 33 p., c. 1,500
July 26.—By WALTON & LEE (at Carlisle).
Lanercost, Cumberland.—Brown Hill enclosures, 12 a. 0 r. 30 p., f. 310
Hardest Farm, 157 a. 2 r. 39 p., f. 4,200
Walton, &c., Cumberland.—Low Wall Farm, 168 a. 2 r. 25 p., f. 3,100
By H. J. WAY & SON (at Newport).
Niton, Isle of Wight.—Upper Farm Mead, 4 a. 0 r. 23 p., f. 450
Lower Farm Mead, 11 a. 0 r. 37 p., f. 790
Enclosure of arable, 3 a. 2 r. 11 p., f. 360
Shorwell, Isle of Wight.—A freehold cottage, y.r. 5*l.* 10*s.* 155
July 28.—By S. BRADFORD.
Chertsey, Surrey.—Guildford-st., the Ye Old Bell Inn, f., p. 2,800
Guildford-st., The King's Head Hotel and house adjoining, f., y.r. 62*l.* 10*s.* 3,900
Horsell, Surrey.—Guildford-rd., the Barley Mow p.h., f., p. 1,075
By BRADSHAW BROWN & CO.
Bromley-by-Bow.—11, Abbott-rd. and 2, Portree-st., with builder's yard, u.t. 71 yrs., g.r. 9*l.* 15*s.*, p. (including goodwill) 800
98, Abbott-rd., u.t. 71 yrs., g.r. 4*l.* 10*s.*, w.r. 28*l.* 12*s.* 220
Canning Town.—1 to 29 (odd), Agate-st, u.t. 65 yrs., g.r. 59*l.* 10*s.*, w.r. 315*l.* 18*s.* 900
37 to 51 (odd), Rendel-rd., u.t. 58 yrs., g.r. 28*l.*, w.r. 195*l.* 775
Cubitt Town.—159 to 185, 195 to 201 (odd), Stebondale-st., and 254, 256, 319, 321, and 323, Manchester-rd., u.t. 6 yrs., g.r. 125*l.*, w.r. 561*l.* 12*s.* 210
258, Manchester-rd. (S), u.t. 38 yrs., g.r. 6*l.*, w.r. 28*l.* 12*s.* 130
Millwall.—104 to 110 (even), Mellish-st., u.t. 97 yrs., g.r. 14*l.*, w.r. 146*l.* 12*s.* 1,215
112 to 118 (even), Mellish-st. (now building), u.t. 97 yrs., g.r. 14*l.* 330
By ELLIOTT, SON, & BOYTON.
Marylebone.—94, Portland-pl., and 8, Park-cres.-mews, u.t. 8½ yrs., g.r. 50*l.*, y.r. 300*l.* 1,550
By GARRETT, WHITE, & POLAND.
Soho.—Moor-st., The Cambridge p.-h., f.g.r. 140*l.*, reversion in 64 yrs. 3,840
By GIDDY & GIDDY.
Ashford, Middx.—Ashford-rd., Ashford Lodge and 15¾ acres, f., p. 5,000
1 to 6, Ashford Lodge Cottages, f., w.r. 75*l.* 8*s.* 750
By Messrs. KEMSLEY.
Leyton.—98, 106, and 108, Frith-rd., f., w.r. 89*l.* 14*s.* 970
By KING & CHASEMORE.
Pulborough, Sussex.—Enclosure of meadow, 5 a. 1 r. 35 p., f., y.r. 5*l.* 110
Old Soil Farm, 27 a. 2 r. 1 p., f., p. 410
By PROTHEROE & MORRIS.
Leytonstone.—Barclay-rd. North, three freehold houses, e.r. 96*l.* 1,080
By HARRIE STACEY.
Reigate, Surrey.—Somers-rd., Stoneleigh, f., y.r. 160*l.* 2,560
By WAGSTAFF & SONS.
Holborn.—30 and 31, Hatton-gdn. (offices and warehouses), u.t. 15 yrs., g.r. 250*l.*, y.r. 1,070*l.* 1,700
Hoxton.—89 to 97 (odd), Arlington-st., u.t. 34 yrs., g.r. 25*l.*, y.r. 181*l.* 1,475
Highbury.—46 and 48, Elfort-rd., u.t. 74 yrs., g.r. 12*l.* 12*s.*, y.r. 80*l.* 810
By FULLER, HORSEY, SONS, & CASSELL (on premises).
Bermondsey New-rd.—Chocolate and confectionery works, area 32,500 ft., u.t. 38 yrs., g.r. 200*l.* (including plant, machinery, &c.) .. 9,000
By CUNNAH & ROBERTS (at Wrexham).
Bangor-on-Dee, Flint.—Bangor Bank Farm, 114 a. 3 r. 5 p., f. 3,500
By HOWKINS & SON (at Rugby).
Barby, &c., Northants.—Onley Fields Farm, 180 a. 3 r. 22 p., f., y.r. 133*l.* 14*s.* 3,660
Nine closes of pasture, 92 a. 1 r. 5 p., f. 1,650
A freehold farm, 32 a. 1 r. 10 p., y.r. 35*l.* 925
By BIDWELL & SONS (at St. Ives).
Pidley, Hunts.—Stanley House Farm, 120 a. 2 r. 15 p., f. 2,300
Enclosures of land, 42 a. 2 r. 9 p., f. 850
Freehold fen land, 57 a. 1 r. 20 p. 1,490
Old Hurst, Hunts.—Enclosures of land, 43 a. 2 r. 29 p., f. £450
July 29.—By CHANCELLOR & SONS.
Norwood.—39, Central-hill, f., y.r. 45*l.* 800
Turnham Green.—1, Heathfield-ter., f., y.r. 20*l.* 330
Mortlake.—72, High-st., c., w.r. 14*l.* 6*s.* 205
Twickenham.—3, 13, and 15, King's-rd., u.t. 78 yrs., g.r. 15*l.* 10*s.*, w.r. 87*l.* 2*s.* 500
By DEBENHAM, TEWSON, & CO.
City of London.—7, Aldermanbury (three-tenths share), area 1,240 ft., f., y.r. 600*l.* 3,700
Hampstead.—94, Greencroft-gdns., u.t. 36½ yrs., g.r. 17*l.* 10*s.*, p. 1,500
By L. FARMER & SONS.
St. John's Wood.—94, Abbey-rd., u.t. 53½ yrs., g.r. 10*l.*, e.r. 65*l.* 570
By FIELD & SONS.
Blackfriars.—21 and 23, Stamford-st., area 3,200 ft., f., p. 3,000
Bermondsey.—37, Rolls-rd. (S), u.t. 44½ yrs., g.r. 3*l.*, e.r. 55*l.* 300
Gunnersbury.—67 and 69, Oxford-rd., u.t. 64½ yrs., g.r. 16*l.*, y.r. 72*l.* 600
By FOSTER & CRANFIELD.
Dulwich.—Fenwick-rd., f.g.r. 6*l.*, reversion in 71 yrs. 160
Arnott-rd., f.g.r.'s 27*l.* 10*s.*, reversion in 73 yrs. 730
By MULLETT, BOOKER, & CO.
Notting Hill.—24, Lansdown-rd., f., p. 2,240
Hyde Park.—10, Cambridge-st., u.t. 19 yrs., g.r. 9*l.*, y.r. 85*l.* 600
By REYNOLDS & EASON.
Bethnal Green.—43 to 51 (odd), Punderson's-gdns., f., w.r. 213*l.* 4*s.* 2,195
73, Punderson's-gdns., f., w.r. 44*l.* 4*s.* 435
Hendon.—The Hyde, Vine Cottage, area 0 a. 0 r. 16 p., f., p. 540
By SIM & RANDALL.
Bethnal Green.—9 and 11, Thoydon-rd., u.t. 48 yrs., g.r. 8*l.*, w.r. 75*l.* 525
4 and 6, Conyer-st., u.t. 48 yrs., g.r. 8*l.*, w.r. 75*l.* 8*s.* 630
12 to 20, Lawfranc-rd., u.t. 46½ yrs., g.r. 34*l.* 15*s.*, w.r. 327*l.* 12*s.* 2,120
2, 3, and 6, Lawfranc-rd., u.t. 44½ yrs., g.r. 13*l.* 10*s.*, w.r. 109*l.* 4*s.* 680
Bethnal Green.—4 and 5, Lawfranc-rd., area 1,450 ft., u.t. 44½ yrs., g.r. 9*l.*, w.r. 106*l.* 12*s.* 465
5 to 19 (odd), Burgoyne-rd., u.t. 48 yrs., g.r. 8*l.*, w.r. 99*l.* 10*s.* 2,350
to 20 (even), Burgoyne-rd., u.t. 48 yrs., g.r. 10*l.*, w.r. 351*l.* 2,660
to 21 (odd), Conyer-st., u.t. 49 yrs., g.r. 7*l.*, w.r. 262*l.* 12*s.* 1,930
23, 25, and 27, Conyer-st., u.t. 49 yrs., g.r. 12*l.* 12*s.*, w.r. 120*l.* 18*s.* 890
1, 3, 5, and 7, Olga-st., u.t. 48 yrs., g.r. 16*l.* 16*s.*, w.r. 145*l.* 12*s.* 1,020
9, Olga-st., u.t. 48 yrs., g.r. 4*l.* 5*s.*, w.r. 33*l.* 16*s.* 230
101A, Roman-rd., u.t. 48 yrs., g.r. 4*l.* 10*s.*, w.r. 42*l.* 18*s.* 360
by F. WARMAN.
Hornsey Rise.—41, Dresden-rd., u.t. 80 yrs., g.r. 7*l.* 10*s.*, y.r. 41*l.* 520
Chalk Farm.—13, Elsworthy-rd., u.t. 62 yrs., g.r. 5*l.*, y.r. 100*l.* 1,100
Barnsbury.—55, Arundel-sq., u.t. 56½ yrs., g.r. 8*l.* e.r. 52*l.* 450
18 and 32, Sonning-st., u.t. 57 yrs., g.r. 14*l.*, e.r. 88*l.* 50
Hornsey.—18, Church-lane, u.t. 90½ yrs., g.r. 8*l.* 8*s.*, y.r. 52*l.* 540
By DEBENHAM, TEWSON, & CO. (at Tenbury).
Knighton-on-Teme, &c., Worcester.—The Bickley Estate, about 891 a., f. (in numerous lots) 21,215
By T. RULE OWEN & SON (at St. Clears).
Llanfihangel Abercowin, Carmarthen.—Pentre House Farm, 113 a. 1 r. 3 p., f. (in lots) 9,310
By T. E. AYRE & CO. (at Tiverton).
Rackenford, &c., Devon.—Tidderson Estate, 155¾ a., f. 1,350
By JAMES T. PEAT (at Reigate).
Reigate, Surrey.—5 and 7, Doods-rd., f., w.r. 39*l.* 31, High-st. (S), beneficial lease for 10 yrs., y.r. 25*l.* 565
July 30.—By DREW & SON.
Richmond Hill, Surrey.—3, Downe-ter., f., e.r. 130*l.* 100
By H. C. BIGDEN.
Battersea.—81 and 83, Lavender-rd., f., w.r. 70*l.* 4*s.* 1,810
54, Shelgate-rd., f., q.r. 33*l.* 755
Wimbledon.—52 to 68 (even), Deburgh-rd., f., w.r. 183*l.* 6*s.* 550
94 to 100 (even), Deburgh-rd., f., w.r. 89*l.* 14*s.* 1,575
Deburgh-rd., f.g.r.'s 24*l.* 10*s.*, reversion in 79 yrs. 775
Belvedere, Kent.—25, 26, and 27, Picardy Hill (S), f., y.r. 92*l.* 560
Battersea.—10 to 16 (even), Afghan-rd., u.t. 75½ yrs., g.r. 30*l.*, w.r. 145*l.* 12*s.* 1,320
1, Grant-rd., u.t. 40½ yrs., g.r. 3*l.* 4*s.*, q.r. 33*l.* 1,175
66, Bridge-rd. (S), u.t. 22 yrs., g.r. 3*l.*, w.r. 31*l.* 4*s.* 230
9, 15, and 19, Falcon-gr., u.t. 48½ yrs., g.r. 10*l.* 2*s.*, y.r. 100*l.* 18*s.* 150
51, 53, and 55, Maysoule-rd., u.t. 76½ yrs., g.r. 15*l.*, w.r. 97*l.* 10*s.* 945
Kennington.—16, Renfrew-rd., u.t. 25 yrs., g.r. 6*l.*, y.r. 42*l.* 725
Peckham.—3*A*, Seldon-rd., u.t. 62 yrs., g.r. 5*l.*, w.r. 33*l.* 16*s.* 305
Chelsea.—36, Manor-st. (S), u.t. 41 yrs., g.r. 4*l.*, y.r. 38*l.*; also 18 and 20, Wellington-st., u.t. 43 yrs., g.r. 4*l.*, w.r. 28*l.* 12*s.* 195
Battersea.—5 to 11 (odd), Stainforth-rd., u.t. 66 yrs., g.r. 18*l.*, w.r. 109*l.* 4*s.* 105
31 to 39 (odd), Cabul-rd., u.t. 95 yrs., g.r. 22*l.* 10*s.*, w.r. 116*l.* 14*s.* 705
By ARTHUR BLACKFORD.
Holloway.—102, Junction-rd., u.t. 71½ yrs., g.r. 7*l.* 7*s.*, y.r. 55*l.* (including mortgage) 750
By BURLEY & BRACKENBURY.
Ealing.—Caldershaw-rd., f.g.r.'s 24*l.*, reversion in 994 yrs. 580
By DAVID J. CHATTELL.
Oxford-st.—25, Market-pl. (S), u.t. 18 yrs., g.r. 12*l.*, y.r. 92*l.* 625
Paddington.—5, Cambridge-mews, u.t. 28 yrs., g.r. 5*l.*, y.r. 40*l.* 1,100
Bayswater.—5 and 7, Norfolk-rd. (S), u.t. 43½ yrs., g.r. 18*l.*, y.r. 105*l.* 350
Leyton.—High-rd., f.g.r.'s 40*l.*, reversion in 79 yrs. £1,000
Chislehurst, Kent.—6 to 10, Victoria Cottages, f., w.r. 81*l.* 18*s.* 870
1 to 5, Victoria Cottages, u.t. 77 yrs., g.r. 10*l.*, w.r. 78*l.* 750
By F. JOLLY & CO.
Poplar.—44 and 46, Glengall-rd., and 25, Marshfield-st., u.t. 39 yrs., g.r. 8*l.*, w.r. 72*l.* 16*s.* .. 500
62 to 68 (even), Glengall-rd., u.t. 39 yrs., g.r. 12*l.* 16*s.*, w.r. 93*l.* 12*s.* 450
Millwall.—205, West Ferry-rd. (S), u.t. 9 yrs., g.r. 2*l.* 10*s.*, y.r. 40*l.* 525
By G. PEARCE & SONS.
St. Luke's.—164, Whitecross-st. (S), f., w.r. 95*l.* 4*s.* 165
By R. TIDEY & SON.
Islington.—96, Engleheld-rd., u.t. 37½ yrs., g.r. 7*l.*, y.r. 50*l.* 930
De Beauvoir Town.—16 and 18, Church-rd., u.t. 11 yrs., g.r. 9*l.*, y.r. 83*l.* 480
By Messrs. SPELMAN (at Great Yarmouth).
Great Yarmouth, Norfolk.—Ferry-rd., a freehold timber yard, area 0 a. 3 r. 30 p. 430
Hickling, Norfolk.—A freehold and copyhold farm, 97 a. 0 r. 31 p. 4,400
A freehold house and 11 a. 2,500
The Barn Field, 8 a. 0 r. 33 p., f. 410
Three freehold cottages and gardens 230
The Stalham Field, 12 a. 3 r. 12 p., f. and c. .. 105
Marsh lands, 33 a. 1 r. 22 p., f. and c. 260
Runham, Norfolk.—The Horse Shoe p.-h., f., y.r. 40*l.* 310
Ludham, Norfolk.—A copyhold occupation, 22 a. 2 r. 1 p. 1,940
A copyhold enclosure, 4 a. 0 r. 34 p. 660
By FRANKLIN & JONES (at Oxford).
Charlton-on-Otmoor, Oxon.—The Manor Farm, 89 a. 0 r. 38 p., f. 120
Holts Farm, 81 a. 2 r. 17 p., f. 2,000
First Close, 3 a. 3 r. 37 p., f. 1,500
A freehold holding, 5 a. 3 r. 35 p. 150
Beckley, Oxon.—Ford Grounds enclosures, 19 a. 0 r. 15 p., f. 420
Waters Field, 10 a. 0 r. 25 p., f. 550
By T. LAVINGTON (at Devizes).
Heddington, Wilts.—New Mead, 2 a. 2 r. 30 p., f. 320
Sunny Croft, &c., enclosures, 7 a. 1 r. 19 p., f. .. 150
Wick Farm, 49 a. 0 r. 36 p., f. 355
Rush Marsh, 9 a. 3 r. 18 p., f. 1,700
Hanger Lands and The Copse, 2 a. 2 r. 3 p., f. 420
Hanging or Hunger Land, 5 a. 3 r. 36 p., f. 105
Four freehold cottages and 0 a. 2 r. 20 p. 200
The Manor Farm, 39 a. 2 r. 30 p., f. 175
Lanfear's Meads, 9 a. 2 r. 33 p., f. 1,900
Mobby's and Little Woods, 4 a. 3 r. 4 p., f. 500
July 31.—By HY. CHAPMAN & CO.
Fleet-st.—2, Pemberton-row and 3a, Johnson's-court (shop and workshop), area 1,750 ft., f., y.r. 155*l.* 250
By PERCY H. CLARKE.
Finsbury Park.—84, St. Thomas'-rd., u.t. 65 yrs., g.r. 4*l.* 5*s.*, y.r. 36*l.* 3,625
Holloway.—6, Elfort-rd., u.t. 74 yrs., g.r. 6*l.*, y.r. 30*l.* 360
29, Lowman-rd., u.t. 62 yrs., g.r. 6*l.* 6*s.*, y.r. 32*l.* 395
Dulwich.—Lordship-lane, a plot of freehold land, area 10,700 ft. 230
By BELLHAM, WILLIAMS, & CO.
Wimbledon.—20, Stanley-rd., u.t. 81 yrs., g.r. 12*l.*, e.r. 60*l.* 340
By G. E. CURTIS & SHARP.
East Ham.—45 to 49 (odd), York-rd., u.t. 81 yrs., g.r. 10*l.*, w.r. 68*l.* 12*s.* 415
50 to 64 (even), Rutland-rd., u.t. 84 yrs., g.r. 30*l.*, w.r. 175*l.* 10*s.* 330
10 to 20 (even), Wyndham-rd., u.t. 84 yrs., g.r. 21*l.*, w.r. 127*l.* 8*s.* 955
Upton Park.—121 and 123, Harold-rd., u.t. 84 yrs., g.r. 7*l.* 10*s.*, y.r. 60*l.* 870
Plaistow.—44 to 54 (even), Dongola-rd., u.t. 81 yrs., g.r. 20*l.* 5*s.*, w.r. 140*l.* 8*s.* 400
By FAREBROTHER, ELLIS, & CO.
Old Bond-st.—No. 30 (S), area 1,450 ft., f., p. 800
Marylebone.—1, Bulstrode-mews, u.t. 32 yrs., g.r. 16*l.*, y.r. 100*l.* 25,000
By GREEN & SON.
Limehouse.—Narrow-st., Oporto Wharf, area 3,350 ft., u.t. 180 yrs., g.r. 6*l.*, y.r. 400*l.* 770
Hackney Wick.—Lea Conservancy-rd., manufacturing premises, area 13,600 ft., u.t. 66 yrs., g.r. 34*l.*, y.r. 100*l.* 6,500
By J. & R. KEMP & CO.
Walworth.—306 and 308 Walworth-rd. (S), f., p. 2,300
By C. C. & T. MOORE.
Bexley Heath, Kent.—The Broadway, West Lodge, f., e.r. 125*l.* 1,060
Buckhurst Hill, Essex.—Stag-lane, freehold building land, area 7,800 ft., y.r. 8*l.* 1,400
Mile End.—33, Norfolk-st., u.t. 21½ yrs., g.r. 3*l.* y.r. 36*l.* 150
Poplar.—139 and 141 High-st., and 1 and 2 cottage-st., f., w.r. 88*l.* 8*s.* 210
Limehouse.—17, Rich-st., f., w.r. 32*l.* 10*s.* 810
Bow.—11, Eglinton-rd., f., y.r. 27*l.* 275
July 31.—By NEWBON, EDWARDS, & SHEPHARD.
City of London.—19, Moorgate-st. (S), u.t. 14 yrs., g.r. 42*l.*, y.r. 240*l.* 420
Kilburn.—7, Brondesbury-rd., u.t. 56 yrs., g.r. 14*l.*, y.r. 62*l.* 2,000
Holloway.—168, Brecknock-rd., u.t. 40 yrs., g.r. 8*l.*, y.r. 55*l.* 760
By ERNEST OWERS.
Hampstead.—38, Hillfield-rd., u.t. 70 yrs., g.r. 7*l.* 7*s.*, e.r. 54*l.* 425
By EDMUND SMITH & CO.
Rudgwick, Sussex.—Arun Bank, The Strawberry Gardens Fruit and Flower Farm, 5¾ a., f., p. 530
By STIMSON & SONS.
Peckham.—42 to 52 (even), Queen's-rd., f., y.r. 328*l.* (in lots) 625
1 and 3, Harder's-rd., f., w.r. 66*l.* 8*s.* 5,810
5 to 21 (odd), Harder's-rd., part f. and part u.t. 7½ yrs., g.r. 20*l.*, w.r. 271*l.* 14*s.* 800
109, Meeting House-lane, u.t. 60 yrs., g.r. 6*l.*, w.r. 44*l.* 4*s.* 1,260
Bermondsey.—65, Abbey-st. (S), area 5,500 ft., f., y.r. 60*l.* 255
1,200

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Appointment.	By whom Required.	Salary.	Application to be in
*Clerk of Works	Coventry Corporation	3*l.* 5*s.* per week	Aug. 14
*Clerk of Works	Islington Borough Council	2*l.* 10*s.* per week	Aug. 16
*Estate Surveyor	Norwich Corporation	3*l.* per week	Aug. 18
*Clerk of Works	London County Council	3*l.* 5*s.* to 4*l.* 4*s.* per week	Aug. 20
*Architect's Assistant	do.	1*l.* 10*s.* to 4*l.* 4*s.* per week	do.

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., Supplied by	Tenders to be delivered
Offices, Sowerby Bridge, Yorks	.....	S. Wilkinson, Architect, Sowerby Bridge	.....
Road Materials, &c.	Coventry Corporation	J. E. Swindlehurst, Civil Engineer, St. Mary's Hall, Coventry	Aug. 12
Street Works	Epping U.D.C.	G. J. Creed, District Council Offices, Epping	do.
Club House, London-road	Grays (Essex) Working Men's Club	R. Rider, Maidstone-road, Grays	do.
Additions to Baths, New Islington	Manchester Corporation	Superintendent, Osborn-street Baths, Manchester	do.
Office, High-street, Swansea	Great Western Railway Company	G. K. Mills, Paddington Station	do.
Sewerage Works, &c., Hadleigh-road	Frinton-on-Sea U.D.C.	T. W. Golds, Surveyor, Thorpe-le-Soken	do.
Street Works, Purcell-street, &c.	Gosforth U.D.C.	C. J. Baff, Surveyor, Council Offices, Gosforth	do.
Cemetery Works, Cheadle Heath	Cheadle, &c., U.D.C.	G. H. Brady, Architect, Little Underbank, Stockport	Aug. 13
Additions to Gasworks	Barrow Corporation	Town Clerk, Barrow-in-Furness	do.
Additions to Swimming Bath, Balliol-road	Bootle Corporation	Borough Engineer, Town Hall, Bootle	do.
Additions to Schools, Kelty	Beath School Board	J. Houston, Architect, Dunfermline	do.
Works at Council Chamber	Rugby U.D.C.	D. G. Macdonald, Surveyor, Rugby	do.
Stabling, Albion Brewery	Halifax Brewery Co., Ltd.	Jackson & Fox, Architects, 7, Rawson-street, Halifax	do.
Additions, &c., Town's-yard, Robert-street	Harrogate Corporation	F. Bagshaw, Engineer, Municipal Offices, Harrogate	do.
House, College Bounds, Fraserburgh, N.B.	.....	W. S. F. Wilson, Architect, Fraserburgh	do.
Additions to School, Macclesfield	.....	J. Wright, Architect, Macclesfield	Aug. 14
Church, &c., Willington, Durham	.....	J. Kelly, Architect, 466, Oxford-street, W.	do.
Bridge, Amport	Andover R.D.C.	J. Wormald, Surveyor, South Cottage, Andover	do.
Well Sinking, Tullarvan	Kilkenny R.D.C.	K. Comerford, Council Offices, Kilkenny	do.
Twenty Houses, near Bridgend, Glam.	Cefn Cribbwr Building Club	J. & F. J. Hurley, Architects, Tondu, Glam.	do.
Shelters at Hospital, Monsall	Manchester Corporation	City Architect, Town Hall, Manchester	do.
Additions to School House, Crewe	Church Coppenhall School Board	J. A. Atkinson, Architect, Hightown, Crewe	do.
Electric Power Station	Pontypridd U.D.C.	R. P. Wilson, Engineer, Victoria-street, Westminster, S.W.	Aug. 15
College Buildings, Millingar, Ireland	Bishop of Meath	J. J. O'Callaghan, Architect, 16, Nassau-street, Dublin	do.
Ore, &c., Depots, Jarrow-on-Tyne	Palmer's Shipbuilding Co., Ltd.	The Secretary, Jarrow-on-Tyne	do.
Sewerage Works	Anstruther Town Council	Jamieson & Guthrie, Town Hall, Anstruther	do.
House, Manor-road, Aberavchan	.....	T. B. Winstone, 16, High-street, Aberavchan	Aug. 16
Storage Reservoir, Earl's Barton	.....	R. E. Middleton, Civil Engineer, 17, Victoria-street, S.W.	do.
Well Sinking, Aghern	Fermoy R.D.C.	P. O'Neill, Workhouse, Fermoy	do.
Sewer, Bierton	Aylesbury R.D.C.	W. E. Stanley, Bierton-road, Aylesbury	do.
Car Shed, Shops, &c., Liversedge, Yorks	.....	British Elec. Traction Co., Ltd., 1, Adelphi-terrace, Strand, W.C.	Aug. 17
Hotel, Stables, &c., Aberaman	.....	Smith & Davies, Architects, Aberdare	Aug. 18
Additions, &c., to Farm Buildings, Macclesfield	.....	H. Beswick, Architect, Newgate-street, Chester	do.
Foundations at Asylum, Whitchurch	Cardiff Corporation	Oatley & Skinner, Architects, Baldwin-street, Bristol	do.
Sewers	Heywood (Lancs.) Town Council	J. Diggle, Civil Engineer, Heywood	do.
Pipe Sewer, Oak-lane	Sevenoaks U.D.C.	S. Towlson, Civil Engineer, Council Offices, Sevenoaks	do.
Stone Bridge, Llanarth	Abergavenny R.D.C.	J. Gill, Surveyor, 4, Brecon-road, Abergavenny	do.
*Private Dwelling Houses	Westbury Estate Office, Wood Green	Estate Office, 9, Waldegrave-road, Turnpike-lane, Hornsey	Aug. 19
Stable, &c., St. Buryan, Cornwall	.....	G. Gow, Tregothnan Office, Truro	do.
Granite Road Metal	Bishops Stortford U.D.C.	T. Swatheridge, North-street, Bishops Stortford	do.
*Erection of Water Tower at Hospital near Gravesend	Corporation of London	County Surveyor, Guildhall, E.C.	do.
*Laying Tar-paving to Schools, Ashford	Ashford School Board	Jeffery & Lacy, Architects, Ashford, Kent	do.
*Recnastrctn. of Drainage System, Kingsworth Ind. Sch.	Kent County Council	City Surveyor, Maidstone	do.
Laying Pipes (16 miles)	Ilfracombe U.D.C.	O. M. Prouse, Civil Engineer, Town Hall, Ilfracombe	Aug. 20
Reservoir, Ilkeston	Water Board	G. & F. W. Hodson, Engineers, Loughborough	Aug. 21
*Electric Power Station and Car Sheds	Pontypridd U.D.C.	R. P. Wilson, Engineer 66, Victoria-street, S.W.	Aug. 22
*Fixing Iron Bands round Chimney Shaft, Tooting	Metropolitan Asylums Board	Office of Board, Embankment, E.C.	Aug. 27
*Repairing Tar-paving, Grove Fever Hospital, Tooting	do.	do.	do.
*Erecting Bath Room, New Fever Hospt., Hampstead	do.	do.	do.
*Raising Ceilings, &c., Exmouth Training Ship Infirmary	do.	do.	do.
Asylum, Caerleon, Mon.	.....	.....	do.
*Pipe Sewer and Surface Water Drains, &c., Mill Hill	Newport Corporation	A. J. Wood, Architect, 22, Surrey-street, W.C.	do.
*Building Church at Haslemere, Surrey	Irwin E. B. Cox, Esq., M.P.	Pollard & Tingle, Engineers, 31, Old Queen-street, S.W.	Aug. 28
*Generating Station, Stretford, Manchester	The Building Committee	Spooner & Cobbold, Architects, 17, Red Lion-square, W.C.	do.
*Additions, &c., to Schools, Bush Hill Park	Stretford U.D.C.	E. Woodhouse, Architect, 88, Mosley-street, Manchester	Aug. 31
*New Infirmary	Enfield School Board	F. E. T. Lawrence, Architect, 22, Buckingham-street, W.C.	Sep. 9
*Coal Stores (including Steel Work and Builders' Work)	Bristol Guardians	J. J. Simpson, St. Peter's Hospital, Bristol	Sep. 10
Alterations, &c., to Station Hotel, Abertillery	Metropolitan Borough of Hackney	R. Hammond, Engineer, 64, Victoria-street, S.W.	Sep. 11
Two Villas, Moorhead, Shipley	Trustees of E. Lewis	T. Roderick, Architect, Aberdare	No date
Business Premises, Elm Grove, Southsea	.....	J. Crawshaw, Architect, 1, Norman-drive, Ecclesbill	do.
Chapel and School, Stoke Ferry	Mr. R. Payne	G. E. Smith, Architect, 145, Victoria-road North, Southsea	do.
Chapel and School, Openshaw, Lancs.	.....	W. H. Tuck, Stoke Ferry	do.
House and Shops, Aboyne, N.B.	.....	Burton & Percival, Architects, Stamford-st., Ashton-under-Lyne	do.
Stables, &c., Gate Burton, Gainsborough	.....	P. Grant, Aboyne	do.
Two Houses, Gosforth, Yorks	.....	E. F. Green, Architect, Gainsborough	do.
Bakery, Stables, &c., Heywood	.....	J. Fisher, 75, Pilgrim-street, Leeds	do.
Warehouse, Armley, Leeds	.....	Openshaw & Gill, Architects, Bury, Lancs.	do.
Bungalow, Burley, Bradford	Messrs. H. Hartley & Co.	F. W. Rhodes, Architect, Upper Wortley-road, Leeds	do.
*New Nurses' Home, &c., at Infirmary, Withington	.....	W. H. H. Marten, Architect, Cheapside Chambers, Bradford	do.
	Chorlton Union	J. B. Broadbent, Architect, 15, Cooper-street, Manchester	do.

PUBLIC APPOINTMENTS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
*Designs for University Buildings, Cape of Good Hope	Agent. Gen. for Cape of Good Hope	400*l.*, 200*l.*, and 100*l.*	Jan. 31

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. & x. *Public Appointments,* xix.

111, Abbey-st., f., y.r. 36*l.* 360
63, Bermondsey-st., f., y.r. 35*l.* 600
38, Decima-st. (warehouse), f., y.r. 40*l.* 500
Brixton.—11, Barrington-rd., u.t. 20¾ yrs., g.r. 8*l.*, e.r. 60*l.* 370
9, Bankton-rd., u.t. 72 yrs., g.r. 6*l.* 6*s.*, e.r. 36*l.* 360
Camberwell.—170, The Grove, u.t. 21 yrs., g.r. 10*l.* 10*s.*, y.r. 55*l.* 240
54, Camberwell-grove, f., y.r. 40*l.* 610
Chelsea.—141 and 143, Beaufort-st., u.t. 71¾ yrs., g.r. 21*l.*, y.r. 140*l.* 1,395
Greenwich.—135, South-st. (S), u.t. 50 yrs., g.r. 5*l.*, y.r. 35*l.* 265

August 1.—By C. H. Brown.

Holloway.—43, Campbell-rd., u.t. 89 yrs., g.r. 6*l.*, w.r. 26*l.* 210

By Chambers & Gibt.

Hackney.—33, Cadogan-ter., u.t. 151 yrs., g.r. 4*l.* 10*s.*, w.r. 39*l.* 260

By Messrs. Cobb.

Walton-on-Thames, Surrey.—Broad-lane, enclosures of freehold land, with cottage and buildings thereon, area 25 a. 1 r. 6 p. 2,000
Wye, Kent.—The Devil's Kneading Trough (land), 64 a. 2 r. 10 p., f. 325
Hastingleigh, Kent.—New Barn Farm, 199 a. 1 r. 28 p., f. 1,850

By Nott, Cartwright, & Etches.

Tooting.—42, Elmfield-rd., u.t. 88 yrs., g.r. 6*l.* 10*s.*, e.r. 45*l.* 415

By Thomas Woods.

Hounslow, Middlesex.—Bath-rd., Sherborn Villa, f., e.r. 60*l.* 810
Wandsworth-rd.—Nos. 265 and 26 (shops), u.t. 30 yrs., g.r. 15*l.*, y.r. 140*l.* 1,370

***Contractions used in these lists.*—F.g.r.** for freehold ground-rent; **l.g.r.** for leasehold ground-rent; **i.g.r.** for improved ground-rent; **g.r.** for ground-rent; **r.** for rent; **f.** for freehold; **c.** for copyhold; **l.** for leasehold; **e.r.** for estimated rental; **w.r.** for weekly rental; **y.r.** for yearly rental; **u.t.** for unexpired term; **p.a.** for per annum; **yrs.** for years; **st.** for street; **rd.** for road; **sq.** for square; **pl.** for place; **ter.** for terrace; **cres.** for crescent; **av.** for avenue; **gdns.** for gardens; **yd.** for yard.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 13 0	per 1,000 alongside, in river
Rough Stocks and Grizzles	1 10 0	,, ,, ,,
Facing Stocks	2 12 0	,, ,, ,,
Shippers	2 7 0	,, ,, ,,
Flettons	1 8 0	,, at railway depôt.
Red Wire Cuts	1 12 0	,, ,, ,,
Best Fareham Red	3 12 0	,, ,, ,,
Best Red Pressed Ruabon Facing	5 5 0	,, ,, ,,
Best Blue Pressed Staffordshire	4 6 6	,, ,, ,,
Do., Bullnose	4 11 0	,, ,, ,,
Best Stourbridge Fire Bricks	4 6 0	,, ,, ,,
GLAZED BRICKS		
Best White and Ivory Glazed Stretchers	13 0 0	,, ,, ,,
Headers	12 0 0	,, ,, ,,
Quoins, Bullnose, and Flats	17 0 0	,, ,, ,,
Double Stretchers	19 0 0	,, ,, ,,
Double Headers	16 0 0	,, ,, ,,
One Side and two Ends	19 0 0	,, ,, ,,
Two Sides and one End	20 0 0	,, ,, ,,
Splays, Chamfered, Squints	20 0 0	,, ,, ,,
Best Dipped Salt Glazed Stretchers and Headers	12 0 0	,, ,, ,,
Quoins, Bullnose, and Flats	14 0 0	per 1,000 at railway depôt.
Double Stretchers	15 0 0	,, ,, ,,
Double Headers	14 0 0	,, ,, ,,
One Side and two Ends	15 0 0	,, ,, ,,
Two Sides and one End	15 0 0	,, ,, ,,
Splays, Chamfered, Squints	14 0 0	,, ,, ,,
Seconds Quality White and Dipped Salt Glazed	9 0 0	,, less than best.
Thames and Pit Sand	7	3 per yard, delivered.
Thames Ballast	6	0 ,, ,,
Best Portland Cement	31	0 per ton, delivered.
Best Ground Blue Lias Lime	25	0 ,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 10s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks, 26s. 6d. per ton at rly. dpt.

STONE.

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld. rly. depot
Bath ,,	1 7	,, ,,
Farleigh Down Bath	1 8	,, ,,
Beer in blocks	1 6	,, ,,
Grinshill ,,	1 10	,, ,,
Brown Portland in blocks	2 2	,, ,,
Darley Dale in blocks	2 4	,, ,,
Red Corsehill ,,	2 5	,, ,,
Closeburn Red Freestone	2 3	,, ,,
Red Mansfield ,,	2 4	,, ,,
Hard York in blocks	2 10	,, ,,
,, ,, 6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2 8	per ft. super. deld. rly. depôt.
,, ,, 6 in. Rubbed Ditto	3 0	,, ,,
,, ,, 3 in. sawn both sides slabs (random sizes)	1 3	,, ,,
,, ,, 2 in. self-faced Ditto	0 9½	,, ,,
Hopton Wood (Hard Bed) in blocks	2	3 per ft. cube. deld. rly. depôt
,, ,, ,, 6 in. sawn both sides landings	2	7 per ft. super. deld. rly. depôt.
,, ,, ,, 3 in. do.	1	2½ ,, ,,

SLATES.

in.	£ s. d.	
20×10 best blue Bangor	12 0 0	per 1000 of 1200 at rly. dep
,, best seconds ,,	11 10 0	,, ,,
16×8 best ,,	6 17 6	,, ,,
20×10 best blue Portmadoc	11 7 6	,, ,,
16×8 best blue Portmadoc	6 5 0	,, ,,
20×10 best Eureka unfading green	13 10 0	,, ,,
16×8 ,, ,,	7 10 0	,, ,,
20×10 permanent green	10 10 0	,, ,,
16×8 ,, ,,	6 0 0	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles	4 6	per 1,000, at rly. depôt.
Hip and valley tiles	3 7	per doz. ,, ,,
Best Broseley tiles	4 6	per 1,000 ,, ,,
Hip and valley tiles	4 0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57 6	per 1,000 ,, ,,
Do. ornamental Do.	60 0	,, ,, ,,
Hip tiles	4 0	per doz. ,, ,,
Valley tiles	3	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes)	50 9	per 1,000 ,, ,,
Hip tiles	4 1	per doz. ,, ,,
Valley tiles	3 8	,, ,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	14 10 0	16 0 0
Deals: best 3 by 9	13 10 0	15 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	10 10 0	11 10 0
Battens: best 2½ by 6 and 3 by 6	9 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best
Battens: seconds	0 10 0	,, ,, ,,
2 in. by 4 in. and 2 in. by 6 in.	8 10 0	9 10 0
2 in. by 4½ in. and 2 in by 5 in.	8 0 0	9 0 0
Foreign Sawn Boards—1 in. by 12 in. by 12 in.	0 10 0	more than battens.
¾ in.	1 0 0	,,
Fir timber: Best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Swedish balks	2 15 0	3 0 0
Itch-pine timber (50 ft.)	3 0 0	3 10 0
JOINERS' WOOD.	At per standard.	
White Sea: First yellow deals, 3 in. by 11 in.	22 0 0	23 0 0
3 in. by 9 in.	20 0 0	21 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	18 0 0
Second yellow deals, 3 in. by 11 in.	18 0 0	20 0 0
,, ,, 3 in. by 9 in.	16 10 0	18 10 0
Battens, 2½ in. and 3 in. by 7 in.	13 0 0	14 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	14 0 0	15 10 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	20 0 0	21 0 0
Do. 3 in. by 9 in.	17 0 0	18 0 0
Battens	13 0 0	14 0 0
Second yellow deals, 3 in. by 11 in.	15 0 0	16 10 0
Do. 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Third yellow deals, 3 in. by 11 in.	12 10 0	13 10 0
Do. 3 in. by 9 in.	12 0 0	13 0 0
Battens	10 0 0	11 0 0
White Sea and Petersburg:—		
First white deals, 3 in. by 11 in.	14 0 0	15 0 0
,, ,, ,, 3 in. by 9 in.	13 0 0	14 0 0
Battens	11 0 0	12 0 0
Second white deals 3 in. by 11 in.	13 0 0	14 0 0
,, ,, ,, 3 in. by 9 in.	12 0 0	13 0 0
,, ,, battens	9 10 0	10 10 0
Pitch-pine: deals	16 0 0	18 0 0
Under 2 in. thick extra	0 10 1	0 0 0
Yellow Pine—First, regular sizes	32 0 0	33 10 0
Broads (12 in. and up)	2 0 0	more.
Oddments	22 0 0	24 0 0
Seconds, regular sizes	24 10 0	26 10 0
Yellow Pine Oddments	20 0 0	22 0 0
Kauri Pine—Planks, per ft. cube	0 3 6	0 4 6
Danzig and Stettin Oak Logs—Large, per ft. cube	0 6	0 3 0
Small ,, ,,	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 7½	0 0 8
¾ in. do. do.	0 0 7	- - -
Dry Mahogany—Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	16 0 0	20 0 0
American Whitewood Planks—Per ft. cube	0 3 0	0 3 6
Prepared Flooring—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 0	0 16 6
1 in. by 7 in. yellow, planed and matched	0 13 6	0 17 6
1¼ in. by 7 in. yellow, planed and matched	0 15 0	1 0 0
1 in. by 7 in. white, planed and shot	0 11 0	0 12 6
1 in. by 7 in. white, planed and matched	0 11 6	0 13 6
1¼ in. by 7 in. white, planed and matched	0 13 6	0 15 6

6 in. at 6d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	7 5 0
Compound Girders ,, ,,	8 2 6	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6	8 17 6
Flitch Plates	8 5 0	8 15 0
Cast Iron Columns and Stanchions, including ordinary patterns	7 2 6	8 5 0

METALS.

IRON—	Per ton, in London. £ s. d.	£ s. d.
Common Bars	7 15 0	8 5 0
Staffordshire Crown Bars, good merchant quality	8 5 0	8 15 0
Staffordshire "Marked Bars"	10 10 0	- - -
Mild Steel Bars	9 0 0	9 10 0
Hoop Iron, basis price	9 5 0	9 10 0
,, ,, galvanised	16 0 0	- -

(* And upwards, according to size and gauge.

Sheet Iron, Black.— Ordinary sizes to 20 g.	10 0 0	- - -
,, ,, to 24 g.	11 0 0	- - -
,, ,, to 26 g.	12 10 0	- - -
Sheet Iron, Galvanised, flat, ordinary quality.— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	12 15 0	- - -
,, ,, 22 g. and 24 g.	13 5 0	- - -
,, ,, 26 g.	14 5 0	- - -
Sheet Iron, Galvanised, flat, best quality:— Ordinary sizes to 20 g.	16 0 0	- - -
,, ,, 22 g. and 24 g.	16 10 0	- - -
,, ,, 26 g.	18 0 0	- - -

METALS.

IRON—	Per ton, in London. £ s. d.	£ s. d.
Galvanised Corrugated Sheets.— Ordinary sizes, 6 ft. to 8 ft. 20 g.	12 15 0	- - -
,, ,, 22 g. and 24 g.	13 5 0	- - -
,, ,, 26 g.	14 5 0	- - -
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12 0 0	- - -
,, ,, 22 g. and 24 g.	13 0 0	- - -
,, ,, 26 g.	14 5 0	- - -
Cut nails, 3 in. to 6 in.	9 5 0	9 15 0

(Under 3 in. usual trade extras.)

LEAD, &c.

	Per ton in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3 lbs. & up.	13 17 6	- - -
Pipe in coils	14 7 6	- - -
Soil Pipe	16 17 6	- - -
ZINC—Sheet— Vieille Montagne ton	24 0 0	- - -
Silesian	23 15 0	- - -
COPPER— Strong Sheet per lb	0 0 10	- - -
Thin ,,	0 0 11	- - -
Copper nails ,,	0 0 11	- - -
BRASS— Strong Sheet ,,	0 0 10	- - -
Thin ,, ,,	0 0 10½	- - -
TIN—English Ingots ,,	0 1 4	-
SOLDER—Plumbers' ,,	0 0 7	- - -
Tinmen's ,,	0 0 9	- - -
Blowpipe ,,	0 0 10	- - -

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds'	2½d. per ft. delivered.
,, fourths	2d. ,, ,,
21 oz. thirds	3½d. ,, ,,
,, fourths	3d. ,, ,,
26 oz. thirds	4½d. ,, ,,
,, fourths	3½d. ,, ,,
32 oz. thirds	5½d. ,, ,,
,, fourths	4½d. ,, ,,
Fluted sheet, 15 oz.	3d. ,, ,,
,, 21 ,,	4d. ,, ,,
½ Hartley's Rolled Plate	1½d. ,, ,,
⅝ ,, ,, ,,	2½d. ,, ,,
¾ ,, ,, ,,	2¾d. ,, ,,

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes or barrels	per gallon	0 2 9
,, ,, ,, in drums	,,	0 3 0
Boiled ,, ,, in pipes or barrels	,,	0 2 11
,, ,, ,, in drums	,,	0 3 2
Turpentine, in barrels	,,	0 2 10
,, in drums	,,	0 3 0
Genuine Ground English White Lead	per ton	21 0 0
Red Lead, Dry	,,	20 0 0
Best Linseed Oil Putty	per cwt.	0 8 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Elastic Copa Varnish for outside work	0 16 0
Best Elastic Copal Varnish for outside work	1 0 0
Best Elastic Carriage Varnish for outside work	0 16 0
Best Hard Oak Varnish for inside work	0 10 0
Best Extra Hard Church Oak Varnish for inside work	0 10 6
Fine Hard Copal Varnish for inside work	0 16 0
Best Hard Copal Varnish for inside work	1 0 0
Best Hard Carriage Varnish for inside work	0 16 0
Extra Pale Paper Varnish	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
Best French and Brush Polish	0 10 0

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

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All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABER BARGOED.—For the erection of two cottages, for Mr. J. Williams, Brithdir, near Cardiff. Mr. E. Evans, architect, Hanbury-road, Bargoed, Cardiff:—
T. Morris ..... £430 | Thomas & Hughes £420

[*See also next page.*

ABERAVON.—For the erection of infant-school buildings, The Causeway, for the School Board. Mr. J. A. James, architect, Aberavon :—

Latty & Co...	£3,729 16 10	E. G. Groom .	£2,742 0 0
Morgan Cox .	3,093 0 0	T. Davies	2,647 7 10
S. T. Rees ..	3,050 0 0		

ARMAGH.—For additions to engine house at asylum, for the Committee. Mr. R. H. Dorman, County Surveyor, Armagh :—

Martin & Co., Armagh £226

BOSTON (Lincs).—For the erection of Municipal buildings, for the Town Council. Mr. Jas. Rowell, architect, Market-place, Boston. Quantities by Mr. W. Hoffman Wood, 14, Park-square, Leeds :—

Rands & Son	£17,421 4 4	Williamson & Co.	£13,666 0 0
Parker & Son	15,915 0 0	J. Lucas	13,425 0 0
J. Cracknell..	14,375 0 0	Sherwin & Son	13,150 0 0
The Lincoln Co-operative Industrial Society	13,739 0 0		

BRISTOL.—For extensions of the docks offices, Queen-square, for the Docks Committee. Mr. W. V. Gough, architect, 24, Bridge-street, Bristol :—

J. Perkins	£3,380	Downs & Son	£2,995
Cowlin & Son	3,316	G. Humphreys	2,967
E. Walters.....	3,160	J. Ridd.....	2,959
W. Church	3,126	C. A. Hayes, Thomas-street*	2,856
Eastabrook & Sons..	3,087		

[All of Bristol.]

EXETER.—For the execution of roofing works, Commercial-road, for Messrs. Bodley Bros. & Co. Mr. J. A. Lucas, surveyor, Guildhall-chambers, High-street, Exeter :—

Westcott, Austin, & White, Summerland-crescent* £130

HASTINGS.—For the erection of a technical school, Tower-road, for the School Board. Mr. A. W. Jeffery, architect, 5, Havelock-road, Hastings :—

J. Harvey	£2,850	John Lester, Earl-street, Hastings* ..	£2,447
A. H. White	2,525	H. E. Cruttenden ..	2,438
Tapner, Simmonds, & Co.....	2,520	W. & E. Noakes....	2,344
John Parker.....	2,477	Gann & Co.	2,295
T. T. Denne	2,472		
Padgham & Hutchinson	2,464		

LONDON.—For additions and alterations to receiving wards at Kensington Workhouse, Marloes-road, S.W. Mr. E. Flint, architect, 80, Coleman-street, E.C. Quantities by Mr. V. A. Edlin, 80, Coleman-street :—

W. Webber	£1,315	F. W. Harris	1,169
F. G. Minter.....	1,260	Whitehead & Co. ..	1,150
Jarvis & Sons	£1,245	J. O. Richardson ..	1,075
L. F. Lamplough ..	1,219		

MORTLAKE.—For constructing sewers and making up roads, Leinster-avenue. Mr. William H. Burt, surveyor, 10, Bush-lane, E.C. :—

Killingback & Co...	£2,057	Neave & Son	£1,731
J. A. Stayner	2,049	Wimpey & Co.*	1,585
Kavanagh & Co. ..	1,779		

NOTTINGHAM. — For alterations to the Horse and Groom, situate at the corner of Clumber-street and Upper Parliament-street. Mr. Fred C. Martin, architect, Angel-row, Nottingham :— .

W. Maule	£560	Vickers, Ltd.*	£525

OLD TRAFFORD.—For work in connexion with the erection of public baths, Old Trafford, for the Stretford Urban District Council. Mr. Ernest Woodhouse, architect, 88, Mosley-street, Manchester :—

G. Lewis	£437 3 0	E. C. & J. Keay, Ld.....	£345 0 0
Bennis & Co., Ld.	430 14 9	J. & T. Booth, Bolton	342 2 6
W. Brettell	417 7 0	Dunkerley & Co. Ld.....	338 0 0
Heenan & Froude	385 13 4	Pendleton Iron-works Co....	335 1 5
Walker Bros. ..	379 0 0	McIntyre & Jones	333 13 0
Carter Bros....	373 19 8	Manchester Iron & Steel Co. ..	328 0 0
Cross & Cross..	372 9 9	Wilby & Co. ..	303 15 0
Bruce & Still, Ld.	362 11 10	Schofield & Hancock	300 0 0
Goddard, Massey, & Warner	361 11 7	Taylor & Co.*	280 0 0
Wood & Co. Ld.	361 0 0		
Dorman Long & Co., Ld.	353 0 0		

PYLE (Glam.).—For erecting four cottages, for Mrs. M. O'Niell. Mr. J. A. James, architect, Aberavon. Quantities by the architect :—

Anderson & Vaughan	£1,320	Howell & Cockwell, Aberavon*	£836
W. J. Jackson.....	928		

SYMONDS GREEN.—For the erection of a beerhouse and cottage, Symonds Green, Herts. Mr. J. Randall Vining, architect, 89, Chancery-lane, London, W.C. :—

Black & Son	£925	W. J. Spratt	£697
J. & C. Bowyer	825	F. Newton	692
J. H. Aldridge	709	Willmott & Sons, Hitchin*	690
S. Redhouse, sen.	700		

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